

UCI



1991-92
GENERAL
CATALOGUE

Academic Calendar

Please read the *Catalogue* and the quarterly *Schedule of Classes* very carefully for detailed information on enrollment procedures and late service fees. The registration process consists of a number of steps in addition to enrolling in classes. Medical students should consult the College of Medicine Office of Admissions for the College of Medicine calendar.

Fall Quarter, 1991

Quarter Begins	Sept. 23 (Mon.)
Advising and Orientation	Sept. 23-27 (Mon.-Fri.)
Instruction Begins	Sept. 30 (Mon.)
Thanksgiving Holiday	Nov. 28-29 (Thurs.-Fri.)
Instruction Ends	Dec. 6 (Fri.)
Final Examinations	Dec. 9-13 (Mon.-Fri.)
Quarter Ends	Dec. 13 (Fri.)
Winter Recess	Dec. 24-25 (Tues.-Wed.)
	Dec. 31-Jan. 1 (Tues.-Wed.)

Winter Quarter, 1992

Quarter Begins	Jan. 2 (Thur.)
Advising and Orientation	Jan. 2 (Thur.)
Instruction Begins	Jan. 3 (Fri.)
Martin Luther King, Jr. Holiday	Jan. 20 (Mon.)
Presidents' Day Holiday	Feb. 17 (Mon.)
Instruction Ends	Mar. 13 (Fri.)
Final Examinations	Mar. 16-20 (Mon.-Fri.)
Quarter Ends	Mar. 20 (Fri.)
Spring Holiday	Mar. 23 (Mon.)

Spring Quarter, 1992

Quarter Begins	Mar. 25 (Wed.)
Advising and Orientation	Mar. 25-27 (Wed.-Fri.)
Instruction Begins	Mar. 30 (Mon.)
Memorial Day Holiday	May 25 (Mon.)
Instruction Ends	Jun 5 (Fri.)
Final Examinations	Jun 8-12 (Mon.-Fri.)
Commencement	Jun 13 (Sat.)
Quarter Ends	Jun 13 (Sat.)

Summer Sessions, 1992

Session I	Jun. 22-July 28 (Mon.-Tues.)
Session II	July 29-Sept. 3 (Mon.-Thur.)

Cover photograph by Keith Swan

1991-92 GENERAL CATALOGUE
UNIVERSITY OF CALIFORNIA, IRVINE

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1991-92 General Catalogue

University of California, Irvine
 (USPS-646-660) Volume 25, Number 1, July 1991
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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 department, school, program, or administrative office for further information.

Printed on Recycled Paper

By printing the interior pages of the *Catalogue* on recycled paper, UCI has saved approximately



510 trees
 210,000 gallons of water
 123,000 kilowatt-hours of electricity (enough energy to power 30 average homes for six months).

Additionally, UCI has kept 1,800 pounds of pollutants out of the atmosphere and eliminated 90 cubic yards of waste.

The University of California

David Pierpont Gardner, **President**

The University of California was chartered as the State's only Land Grant College in 1868. Throughout its first decades, the University's development was strongly influenced by leading educators and scholars from various parts of the country. Supported by the State and many generous benefactors, the University was responsive to the needs of California while progressing on a steady climb toward eminence in academic and scientific achievement.

Today the University system includes nine campuses: Berkeley, Davis, Irvine, Los Angeles, Riverside, San Diego, San Francisco, Santa Barbara, and Santa Cruz. All of the campuses adhere to the same admissions guidelines and high academic standards, yet each one has its own distinct character. Among the campuses there are five medical schools, three law schools, and a school of veterinary medicine, as well as professional schools of business administration, education, engineering, oceanography, and many others. The University's libraries are among the finest in the United States; the collections of the more than 100 University of California libraries on the nine campuses are surpassed in size on the American continent only by the Library of Congress collection.

The University is one of the world's largest and most renowned centers of higher education. The faculty is internationally noted for its distinguished academic achievements. On its nine campuses, the University has a total of 20 Nobel laureates. National Academy of Science membership on all campuses numbers 252, greater than any other college or university system.

The University 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, and a broad program of continuing education for adults in the arts, business, and professions.

Under contract with the U.S. Department of Energy, the University operates three national research facilities: the Lawrence Berkeley Laboratory adjoining the Berkeley campus; the Lawrence Livermore National Laboratory at Livermore, California; and the Los Alamos National Laboratory at Los Alamos, New Mexico. Other major research facilities include Lick Observatory, White Mountain Research Station for high-altitude research, Laboratory of Radio Astronomy, Bodega Marine Laboratory, Scripps Institution of Oceanography, Institute of Transportation Studies, Statewide Air Pollution Research Center, Space Sciences Laboratory, Hormone Research Center, and Philip L. Boyd Deep Canyon Desert Research Center, among others.

One of the University's unique resources is its roster of University Professors. The University Professor title is reserved for certain distinguished faculty members who are recognized nationally and internationally as scholars and teachers of exceptional ability. A University Professor may visit a number of University of California campuses during the academic year, holding conferences with students and staff and speaking before general public audiences. A list of University Professors may be found in the Appendix.

Governance. 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. Among these are the Vice Presidents, the Chancellors, and the Directors of the major laboratories. The Regents also directly appoint the principal officers of the Regents: the General Counsel, the Treasurer, and the Secretary.

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.

Students participate in policymaking at both the campus and Universitywide levels.

The Board of Regents includes seven *ex officio* board members, and 18 regular members who are appointed by the Governor for 12-year terms after consultation with an advisory committee. In addition, The Regents appoint a student Regent for a one-year term as a voting Board member with full rights of participation. The chair and vice chair of the Academic Council serve as faculty representatives to the Board and participate fully in all discussions. A constitutional amendment provides that "Regents shall be able persons broadly reflective of the economic, cultural, and social diversity of the State, including ethnic minorities and women." They shall have "full powers of organization and government, subject only to such legislative controls as may be necessary to ensure compliance with the terms of the endowments of the University and the security of its funds."

The President is executive head of the total institution. Each of the nine campuses has a Chancellor as its chief administrative officer. The Chancellor is responsible for the organization and operation of the campus, including academic, student, and business affairs. For the names of University Regents, Officers, and Chancellors, see the Appendix.

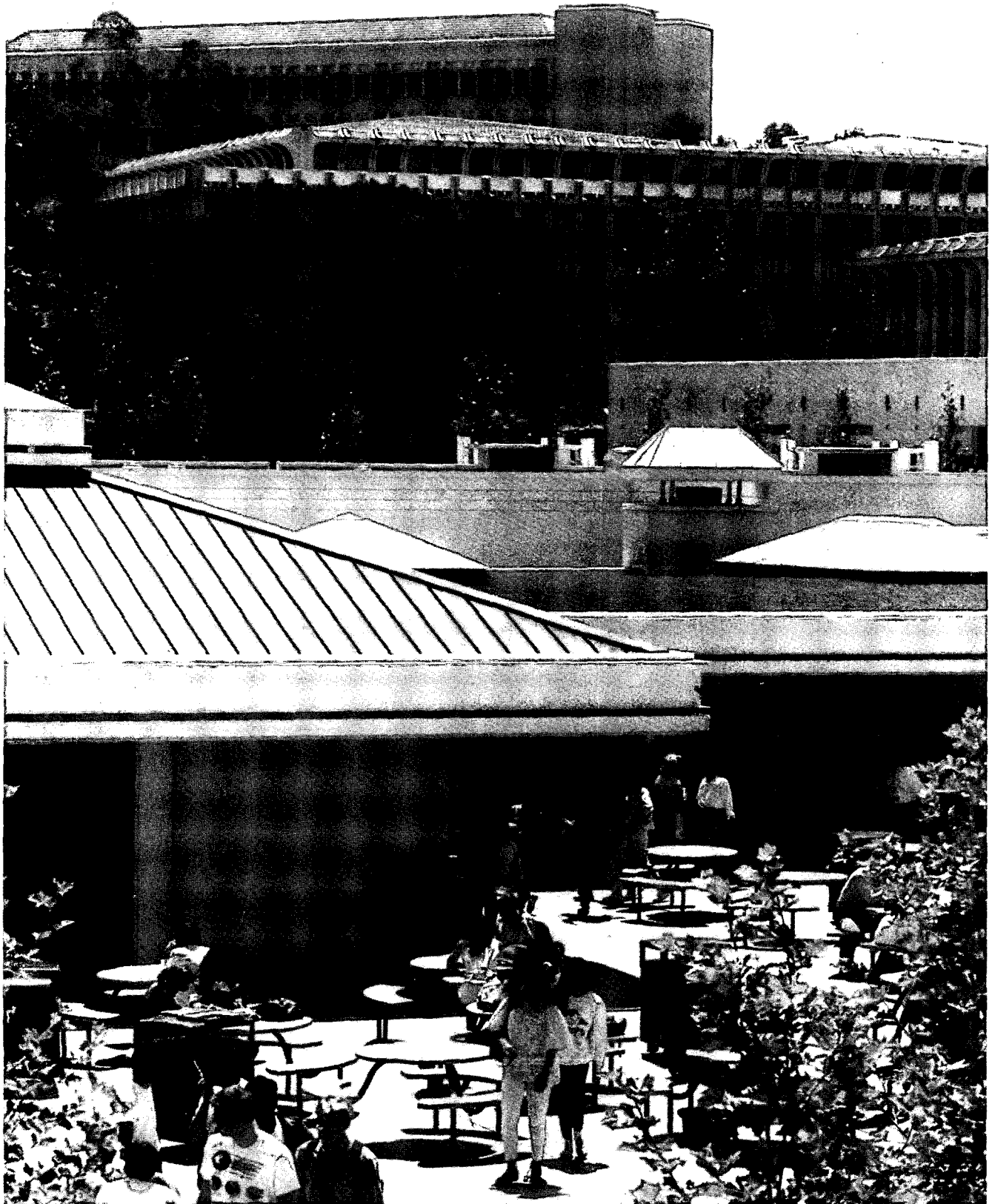
The Irvine Campus

Jack W. Peltason, **Chancellor**

The University of California, Irvine (UCI) opened in 1965 with 116 faculty and 1,600 students. In its first quarter-century, UCI has attained national and international distinction in its programs and faculty. The campus challenges its students both academically and personally and relies on the commitment, curiosity, imagination, and judgment of its faculty and students to assure its continued intellectual and cultural vitality.

The University of California, Irvine is among the leading research universities in the United States. In 1989-90 UCI received more than \$78 million from federal and state agencies and private organizations for the support of basic and applied research and for other scholarly activity. This total represents a 13 percent increase in sponsored research activity over the 1988-89 level. Research is an integral part of all schools and departments, and many of UCI's research programs have achieved national and international distinction for their work.

The research programs at UCI have a positive impact on both undergraduate and graduate education. Research is critical to graduate education because of the research-oriented nature of doctoral study. At the undergraduate level, research at UCI provides undergraduate students with access to a faculty made up of researchers at the forefront of their fields. As a consequence, the knowledge received by UCI students is the latest and most up-to-date available.



The greatly expanded UCI Student Center, reopened in 1990, houses restaurants, recreation rooms, study areas, the University Bookstore, and a variety of other facilities. The Main Library and the Social Science Tower are shown in the background.

UCI is committed to the pursuit and transmission of knowledge. It makes available to its 16,760 students (13,680 undergraduate, 1,940 graduate, and 1,140 medical students and residents) opportunities for gaining knowledge, training, skills, and credentials which in turn can provide the basis for enhanced social and economic opportunities. With regard to making these opportunities available to all students, UCI takes very seriously its responsibility to establish and implement programs that go beyond legal minimums to ensure that all qualified segments of the public have access and equal opportunity to participate in its academic programs.

UCI's education and research missions are fulfilled in its schools, departments, programs, and formal research units. Schools and professional and interdisciplinary units are described briefly below. Formal research unit descriptions are found in the Research and Graduate Studies section.

The **School of Biological Sciences** is the campus' second largest academic unit, with 3,500 students (3,330 undergraduate and 170 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; and cell biology.

The **School of Engineering** focuses on biochemical engineering, earthquake engineering, structural analysis and mechanics, structural reliability, parallel and distributed computer systems, optoelectronics devices and materials, intelligent systems and neural networks, high-speed image/signal processing, combustion and jet propulsion, aerospace, transportation, geotechnical engineering, water resources and environmental engineering, dynamic systems, and heat transfer. The School has 1,310 students, of which 1,000 are undergraduate and 310 are graduate students.

The **School of Fine Arts** teaches the creative as well as the academic and critical sides 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 780 students in the School of Fine Arts, 650 undergraduate and 130 graduate.

Faculty in the **Graduate School of Management** are involved in studies of organizational behavior, management information systems, finance, marketing, real estate, managerial economics, accounting, decision sciences, operations management, strategy, public policy, and health care management. The School has 360 students in its graduate programs leading to the M.B.A. and Ph.D. degrees, and 200 students in its program leading to an undergraduate minor in Management. In addition, the School's Executive M.B.A. Program, established in 1985, has 130 students.

The **School of Humanities** faculty, the largest at UCI, has been repeatedly honored for its teaching and scholarly excellence. Included in the faculty's more than 100 research specialties are literary criticism, film studies, Southern history, the philosophy of science, women's studies, East Asian languages and literatures, and bilingual education. The School houses the renowned René Wellek Special Collection of Literary Criticism and the Thesaurus Linguae Graecae Project, the unique computerized databank of all existing Greek literature from its Homeric beginnings to A.D. 1453. The School has 1,720 students, including 1,390 undergraduate and 330 graduate.

The **Department of Information and Computer Science (ICS)** is dedicated to research and education in the rapidly expanding fields of information management and use, and the technologies that support those fields. A major focus of ICS is the field of computer science, which covers computer system architecture and design, mathematical aspects of computation, software design and development, and artificial intelligence. ICS is building new programs in the applications of information technology, including computing and communications systems, to many aspects of modern life. ICS is a national leader in research into the social and economic aspects of the emerging global information society. The Department has 640 students (530 undergraduate and 110 graduate).

The **School of Physical Sciences** has a student body of 1,170 (890 undergraduate and 280 graduate). Researchers in the School are conducting investigations in atmospheric chemistry (including the discovery of the adverse impact of manmade chlorofluorocarbon compounds on the earth's ozone layer), biogeochemistry and climate, synthetic chemistry, laser spectroscopy, elementary particle physics (including the discoveries of a new subatomic particle—the neutrino—and a rare subatomic event—the double beta decay), plasma physics, and applied mathematics and mathematical physics.

The **Program in Social Ecology**, a multidisciplinary unit established in 1970, is unique to UCI. The Program'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 environmental and social phenomena. Research and teaching are organized in three areas of specialization. The Psychology and Social Behavior area is concerned with human development, health psychology, and mental health. The Environmental Analysis and Design area focuses on design, environmental health and science, and planning. The Criminology, Law and Society specialization covers criminal behavior, social processes, and legal systems. There are 1,230 students participating in the Program (including 1,140 undergraduate and 90 graduate).

The **School of Social Sciences**, with 3,560 students (3,400 undergraduate and 160 graduate), is the largest academic unit at UCI. The faculty's expertise covers a wide range of specific social science topics, several of which are nationally recognized: the mathematical modeling of perception and cognitive processes; the economic analysis of transportation; the examination of the impact of society's political system on its economy and vice versa; the study of social structure and values in different cultures through a formal-scientific methodology; and the exploration of authority structures and inequality in society.

UCI's **Office of Teacher Education**, with 180 students, offers nine credential programs for teachers and administrators in California's public elementary and secondary schools. It focuses on teachers' use of computers in school classrooms, the teaching of writing, and the prevention of abuse of alcohol and other drugs among school children. It has one of the largest credential programs within the University of California system, and it is recognized throughout California for its leadership in the development of innovative programs to improve education in grades K-12.

The **UCI College of Medicine** has 1,140 students (380 medical, 610 resident-physicians and fellows, and 150 graduate). It offers one of the country's largest residency training programs in primary care and internal medicine and houses some of the most advanced equipment in medical imaging and laser medicine available in the world (including a positron emission tomography scanner and an ultrasound microscope, which is one of only two such machines in the U.S. and the only one used in biomedical research). The College's faculty conduct innovative research in the following areas of emphasis: bioethics, biomolecular structure, oncology, cardiovascular and pulmonary diseases, geriatric medicine, immunology, molecular and human genetics, the neurosciences, and perinatology.

Academic Goals

UCI offers programs designed to provide students with a foundation on which to continue developing their intellectual, aesthetic, and moral capacities. The 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 the educational approach at UCI 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, involvement in writing workshops, and participation in fine 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 the exploration of the accumulated knowledge of humanity, and to the development of 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 seeks to provide humanistic understanding of the problems of society.

Academic Structure

Instruction and research programs at UCI focus on fundamental areas of knowledge, and at the same time provide for interdisciplinary and professional study. Five basic Schools represent five fundamental areas of knowledge: Biological Sciences, Fine Arts, Humanities, Physical Sciences, and Social Sciences. Programs covering interdisciplinary and professional studies are offered in the Department of Information and Computer Science, the Program in Social Ecology, the School of Engineering, the Graduate School of Management, and the Office of Teacher Education. The UCI College of Medicine provides educational programs for medical and health sciences graduate students, medical residents, and practicing physicians. Programs in physical education, recreation, and intercollegiate athletics are provided by the Department of Athletics and Physical Education.

The Office of Academic Affairs has responsibility for all programs of instruction and research. It, as well as the Office of Research and Graduate Studies and the Office of Undergraduate Studies, report directly to the Executive Vice Chancellor. Matters of educational policy, including approval of programs, courses, and grades, are the responsibility of the Irvine Division of the Academic Senate. The Irvine Division is part of the Academic Senate of the University of California.

The mission of the Division of Student Affairs and Campus Life may be expressed in terms of its three major goals: (1) to support campus efforts to recruit, enroll, educate, and retain to graduation a diverse student body; (2) to support the academic success and personal development of students with emphasis on ethical development, understanding and appreciation of diversity, leadership skill development, and community service; and (3) to provide programs and services which are ancillary components of a major university. In addition to essential needs such as housing, meals, health services, financial aid, and child care, services include the University Bookstore, the Career Planning and Placement and Counseling Centers, Campus Recreation programs, and the sponsorship of performing arts and lecture programs. The Division also provides services for disabled students, international students, and veterans; supports the Women's Resource Center and the Cross-Cultural Center; and places special emphasis on encouraging students to participate actively in their University experience.

The Dean of Undergraduate Studies provides leadership in developing policies and programs which serve the academic needs of the undergraduate student population and affect the retention of students, including underrepresented and culturally diverse student populations. Undergraduate Studies provides administrative oversight for undergraduate academically related concerns 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 following programs and services are administered by the Office of the Dean of Undergraduate Studies: (1) the Program of Academic Support Services (PASS), which coordinates the Learning Skills Center, Student Academic Advancement Services, the Testing, Research, and Evaluation Office, and the Tutorial Assistance Program; (2) the Center for International Education, which includes the Education Abroad Program and the International Opportunities Program; (3) General Programs, which includes responsibility for the coordination of general assignment classrooms, the enhancement of campus advising with special responsibility for the advising of unaffiliated students (undeclared majors), the Peer Academic Advising Program, and the Student Recommended Faculty Program; (4) the Campuswide Honors Program; and (5) Instructional Development Services, which supports the improvement of teaching and innovation in learning within the UCI community.

The Vice Chancellor for Research and Dean of Graduate Studies has general administrative responsibility for graduate education and research. In the area of research, the Vice Chancellor is responsible for research policy development, implementation, and oversight. In graduate education, the Dean of Graduate Studies serves as the academic dean for all graduate students and is responsible for admissions, enrolled student services, graduate student support, and the Graduate and Professional Opportunity Program, which facilitates the involvement of minorities (including women in designated fields) traditionally underrepresented in graduate education.

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. In addition, the undergraduate degree program of the Department of Chemistry is accredited by the American Chemical Society; the undergraduate programs offered by the Departments of Civil, Electrical and Computer, and Mechanical and Aerospace Engineering are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology; the M.D. program of the UCI College of Medicine is accredited by the Liaison Committee of the Association of American Medical Colleges and the American Medical Association; the Department of Drama is accredited by the National Association of Schools of Theatre; the Graduate School of Management is accredited by the American Assembly of Collegiate Schools of Business; and the credential programs of the Office of Teacher Education are approved by the Commission on Teacher Credentialing.

Phi Beta Kappa

Phi Beta Kappa, founded in 1776, maintains a chapter at UCI. Phi Beta Kappa is the nation's oldest and most prestigious honor society; it recognizes outstanding scholastic achievement in the liberal arts and sciences. Upper-division students whose undergraduate records fulfill certain requirements are eligible for election to membership. Further information can be obtained from the Office of the Dean of Undergraduate Studies, 256 Administration Building.

Office of Affirmative Action and Equal Opportunity

The UCI Office of Affirmative Action and Equal Opportunity develops and supports programs which promote affirmative action and equal opportunity in University employment, services, and education for qualified minorities, women, handicapped persons, and Vietnam Era U.S. veterans. Additionally, the Office implements systems and procedures designed to facilitate compliance with Titles VI and VII of the 1964 Civil Rights Act and Title IX of the Educational Amendments to the Act.

The Office is responsible for assuring fair and equal treatment in University admissions policies, educational programs and activities, and in both undergraduate and graduate student affirmative action programs. The Office also assists in the coordination of student affirmative action plans. The Office is located in 524 Administration Building; telephone (714) 856-5594.

Office of the Assistant Vice Chancellor-University Ombudsman

The Assistant Vice Chancellor-University Ombudsman is available to assist students, faculty, staff, and visitors to the University with problems or concerns they may encounter while at UCI. Problems related to student conduct and discipline, however, are under the jurisdiction of the Office of the Dean of Students (see Appendix). The Assistant Vice Chancellor-University Ombudsman responds to concerns presented by campus individuals and group members by clarifying issues or concerns; making appropriate on- and off-campus referrals for student, faculty, and staff members; and providing a confidential, impartial, and informal setting for grievance and problem resolution. The Office is located in 255 Administration Building; telephone (714) 856-7256.

The Campus Setting

UCI's location offers the cultural and economic resources of an urban area along with access to the scenic, recreational areas of Southern California. Located 40 miles south of Los Angeles, five miles from the Pacific Ocean, and nestled in 1,489 acres of coastal foothills near Newport Beach, UCI lies amid rapidly growing residential communities and a dynamic national and multinational business and industrial complex that affords many employment opportunities. Even so, the campus remains an oasis of green—a natural arboretum planted with trees and shrubs from all over the world. Adjacent to the campus lies the San Joaquin Freshwater Marsh Reserve, part of the University's land preserve system and home to a wide variety of migratory and nonmigratory waterfowl and other wildlife.

The UCI Medical Center, located in the City of Orange on a 33-acre site, is a major teaching hospital for the UCI College of Medicine.

UCI is adjacent to University Town Center, a commercial center which is linked to the campus by a pedestrian bridge. Town Center facilities include apartments, a movie theater complex and comedy nightclub, a post office, restaurants, and various shops and businesses.

Within a few miles of the campus are major department stores; branches of world-renowned boutiques; dozens of outstanding restaurants, many offering cuisines from a variety of other countries; and major hotels. Cultural opportunities include repertory theatres, orchestras, choral groups, dance companies, galleries, and museums. The John Wayne Airport is two miles from campus.

The temperate, Mediterranean climate stimulates year-round water-oriented activities such as windsurfing, sailing, and tide-pooling. The spring, summer, fall, and winter find students, many of whom live in the nearby beach communities of Balboa Island, Balboa Peninsula, and Newport Beach—enjoying the warm sun and gentle sea breezes. Boating enthusiasts set sail in Newport Bay in 14- or 30-foot sailboats or in canoes, available from the UCI Sailing Club. Access to large, offshore racing boats also is occasionally available from the Sailing Club. Local mountain and desert recreation areas are within easy reach, and the UCI Cooperative Outdoor Program provides low-cost rental equipment for hiking and skiing, and instruction for other recreational pursuits. The metropolitan attractions of Los Angeles and San Diego are within a one- to two-hour drive from the campus.

Bus transportation between the campus and major housing areas, shopping centers, and beaches is convenient, and bicycling is popular. Both the campus and the surrounding communities are designed to encourage bicycle traffic, and trails connect UCI to many student housing areas and to the waterfront areas of Newport Beach.

Instructional and Research Facilities

University Library

Calvin J. Boyer, **University Librarian**

The UCI Library is one component of the nine-campus University of California Library system. The UC libraries contain more than 23 million volumes and participate in a resource sharing plan that makes all of them stronger and more useful. Established in 1963, the UCI Library collection has been carefully selected and developed in conjunction with the campus academic plan. The UCI libraries consist of the Main Library, the Physical Sciences Library, the Biomedical Library, the Biological Sciences Library, and the Medical Center Library (in Orange).

The UCI libraries have over 1.4 million volumes and more than 20,000 currently active serials subscriptions that are available for study, teaching, and research. In addition, campus users may request library materials, including periodical articles, from other libraries throughout the world.

All periodicals and books are on open shelves and are easily accessible to all readers (with the exception of certain special units). The following Library departments provide specialized services to the users of the Main Library.

The Reference Department maintains an open-shelf collection of approximately 22,000 volumes. Librarians in the Reference Department assist in the use of reference materials and provide information on a wide variety of topics to campus and community users. The Department has numerous guides and handouts available to assist users in both general and specialized library research and makes available individual research consultations with appropriate subject specialists. The Department also offers the fee-based Computer-Assisted Reference Service (CARS).

Through the Office of Library Education Services, the UCI Library offers a formal course in library research techniques (Humanities 75, Library Research Methods). Library Education Services also coordinates the provision of course-related instruction and general orientations to the Library.

The Government Publications and Microforms Department contains government publications and microforms for the Library. The Government Publications Collection contains more than 400,000 publications issued by the U.S. government, the State of California, international organizations, and Canada. This department also contains the Orange County Public Affairs Collection, a resource of current information on local topics issued by both governmental and nongovernmental agencies. Computer-assisted reference service (CARS) is available on a fee-for-service basis. The microforms collection contains more than one million pieces, including newspapers, periodicals, journals, books, U.S. and foreign government publications, college catalogues, telephone books, the Educational Resources Information Center (ERIC) collection, and various other reports and papers. Machines for reading and copying microform material are available.

The Department of Special Collections contains noncirculating holdings of rare books and early printed works, noteworthy or finely printed editions, exceptionally costly or fragile items, and manuscripts. Special subject collections include French literature of the seventeenth and eighteenth centuries, the René Wellek collection of the history of criticism, the Hans Waldmüller Thomas Mann collection, California history and literature, British naval history, contemporary poetry, dance, historical costume, political pamphlet literature, and the Emma D. Menninger collection in horticulture.

The University Archives, which shares quarters with the Department of Special Collections, is the official repository for records having permanent value in documenting the history of the UCI campus. These records include publications, manuscripts, photographs, and other records of administrative and academic units, student organizations, and campus support groups.

The Southeast Asian Archive documents the experiences of post-1975 Cambodian, Hmong, Laotian, and Vietnamese refugees and immigrants. The archive includes materials relating to the exodus from the homeland, resettlement in the United States, community development, and history and culture of Southeast Asians in the U.S., with a special focus on Orange County and California. The archive contains materials in both Vietnamese and English, including books, dissertations and theses, refugee orientation materials, reports from government and private agencies, periodicals, newspapers and newspaper clippings, audiovisual materials, and manuscripts.

The Library Media Center provides nonprint materials that support campus academic programs. The humanities, social sciences, and sciences are represented in the Center's collection of audio- and videocassettes, films, and computer software. The Center provides a playback area for immediate use of the materials and a microcomputer lab for Macintosh computer software. An audio-cassette duplication service for public domain tapes also is available.

The Current Periodicals Room houses current unbound issues of journals and other periodicals, domestic and foreign newspapers, and a wide variety of popular magazines for recreational reading.

The Main Library Copy Service (third floor) provides copiers and typewriters for patron use and sells media and microcomputer lab supplies. A special function copier is available that will collate material, print on two sides, reduce, or make transparencies. A special service for an additional charge also is provided for patrons who wish to leave materials to be copied. Services are available most of the time the Library is open. The UCI libraries utilize a copy card system and copy cards may be purchased from dispensers at all five libraries. In addition, coin-operated copiers and change machines are conveniently located throughout the libraries.

Reserve Services circulates required or collateral reading materials that have been selected by the faculty for students. Reserve materials circulate for very limited time periods.

Other Main Library facilities include individual and group study seating and a room containing study aids for blind and partially sighted students. The Main Library is open over 90 hours each week during regular sessions of the University.

The Physical Sciences Library is located in the Physical Sciences Building, and contains more than 86,000 volumes on mathematics, physics, astronomy, and chemistry. The collection includes approximately 1,000 serial titles. Hours of service are the same as those in the Main Library; computer-assisted reference services (CARS), copying services, and bibliographic instruction are available.

The Biomedical Library is located in the College of Medicine complex and contains a collection of some 156,000 volumes of medical and biological literature, with subscriptions to more than 2,500 serial titles. Among the audiovisual services provided are microfiche readers, video tape players, and slide projectors with tape players. The Biological Sciences branch of the Biomedical Library is located in the Science Lecture Hall and houses subscriptions to approximately 1,000 current serial titles.

The Medical Center Library is located at the University of California Irvine Medical Center in Orange. Its collection includes approximately 43,000 volumes and more than 1,000 clinical serial subscriptions. This library serves the information needs of the Medical Center and supports the teaching activities of the College of Medicine.

Modern methods for increasing the speed and efficiency of library service are in use throughout the UCI Library system. The Library subscribes to a computer-based cataloging service that enables it to make books available rapidly. Circulation in all libraries is computerized. Computer-assisted reference services (CARS) provide access to a variety of machine-readable bibliographic and numeric databases. The MELVYL online catalog provides users with quick and creative ways to locate books and journals held at UCI and at any other library in the University of California system. Information about CARS and the MELVYL catalog may be obtained at the reference desks in all libraries.

Interlibrary loan service is available on a national and international basis to all University of California faculty, students, and staff. Shuttle bus service to UCLA is offered Monday through Saturday during the regular school year and Monday through Friday during the summer sessions for UCI faculty, students, and staff to use the UCLA libraries. Reservations and information may be obtained by contacting the Main Library Administration Office.

Office of Academic Computing

Computing at UCI is distinguished by the campus' commitment since its founding to make computing an integral part of the undergraduate and graduate academic programs. Almost half of UCI's students are involved with some form of instructional computing every year. The campus data communications network currently supports more than 2,000 campus connections on an optical fiber backbone and provides access to national and international networks, including BITNET, the Internet, and NSFnet. UCI is a founding member of the California Education and Research Federation Network (CERFnet). These networks connect over 40 of the leading research centers in California to computing resources across the United States.

The Office of Academic Computing (OAC) has a twofold mission. First, OAC supports academic departments who run their own instructional and research computing laboratories by providing consulting and operational services. Second, OAC provides central campus resources for computing by operating the campus data communications network, running instructional laboratories which may be used by all departments, and providing computing time on a variety of computers.

OAC consists of three departments: Advanced Scientific Computing, Network and Telecommunications Services, and Academic Computing Services. OAC is a central campus resource for students, faculty, and staff that provides access to a wide range of computer systems and software and a variety of educational, consulting, and technical services. The campuswide data communications network is used to access campus computing systems and connections with external networks which provide campus access to off-campus computing systems, including those at national supercomputer centers.

To help meet campus needs for advanced scientific computing capabilities, OAC operates a Convex C240 with one gigabyte of memory and over 10 gigabytes of disk. The FORTRAN and C compilers on this system take full advantage of the special vector processing capabilities of each of its four processors. The numerical libraries and application packages available on this system have been chosen to help faculty fully exploit its capabilities in a wide range of disciplines. Complementing the CONVEX system, OAC operates and supports smaller systems and workstations for scientific computation and visualization.

Other computing services are provided on a multiprocessor Sequent Symmetry running the UNIX operating system, a Digital VAX Cluster consisting of a 6310 and an 8350 running VMS, Sun Microsystems DEC workstations, and personal computers from IBM, AST, and Apple. Software offerings include a wide variety of applications packages used in statistics, graphics, text formatting, test scoring, financial modeling, computer assisted design (CAD/CAM), and data base management. An electronic mail system also is available, as are packages for micro-to-host communications.

Programming languages available include Pascal, FORTRAN, APL, BASIC, C, LISP, and COBOL. In addition, high-quality graphics and alphanumeric output devices including laser printers and pen-and-ink plotters are available.

Professional staff provide consulting services during normal business hours. In addition to general consulting on OAC computers and software, specialized consulting in the areas of statistics, microcomputing, research computing, and computer system management is offered. Consulting also is available to departments and individuals who are interested in establishing departmental networks.

OAC offers a large number of nonacademic computer workshops for students, faculty, and staff. The workshops cover such topics as the use of specific computers and computer packages, general computer awareness, and the selection and use of microcomputers. (Academic courses in computing are offered by the Department of Information and Computer Science, other academic units, and University Extension.) OAC also provides computer system management, computer operations, and consulting both for its own systems as well as for those systems owned by other units.

Consulting and administrative offices are open during normal business hours. The public terminal room in 308 Computer Science Building provides access to nearly 100 terminals, workstations, and microcomputers which are connected to the campus network. This room may be used by anyone who has valid access to any computer on the network and is open 24 hours a day, seven days a week.

OAC offices and services are located in two areas on campus. Academic Computing Services, Advanced Scientific Computing, the public terminal room, and the main administrative offices are located on the third floor of the Computer Sciences Building; telephone (714) 856-6116. Network and Telecommunication Services is located in 2209 Central Plant; telephone (714) 856-5123.

Irvine Ecological Preserve

The 102-acre Irvine 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 use by the campus community. Additional information is available from the Department of Ecology and Evolutionary Biology, School of Biological Sciences, University of California, Irvine, CA 92717; telephone (714) 856-6006.

Natural Reserves System

The University of California manages and maintains a system of 27 land and water reserves that are representative of the State's habitat and geographic diversity. These serve as outdoor laboratories for students, faculty, and staff, and are intended primarily for purposes of education and research. The reserves are administered by local campus management committees who control their uses. The Irvine campus is responsible for two reserves: the San Joaquin Freshwater Marsh Reserve and the Burns Piñon Ridge Reserve. Additional information is available from the Museum of Systematic Biology, University of California, Irvine, CA 92717; telephone (714) 856-7420.

San Joaquin Freshwater Marsh Reserve

The San Joaquin Freshwater Marsh Reserve, one of the last remaining freshwater marshes of Southern California, is a 202-acre reserve adjacent to the Irvine 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 more than 200 species of birds in the Reserve, a major stopping point on the Pacific Flyway. Periodic tours are conducted. Additional information is available from the Museum of Systematic Biology, University of California, Irvine, CA 92717; telephone (714) 856-7420.

Burns Piñon Ridge Reserve

The Burns Piñon Ridge Reserve is located near the town of Yucca Valley in San Bernardino County. It is a 265-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 primitive camping facilities and is used primarily for overnight field trips and research by faculty and students from the School of Biological Sciences. Additional information is available from the Museum of Systematic Biology, University of California, Irvine, CA 92717; telephone (714) 856-7420.

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 gene bank devoted to the conservation of African monocot floras and contains several important collections of rare plants. Certain research and instructional materials are grown. The Arboretum 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. Additional information is available from the Arboretum Office; telephone (714) 856-5833.

Museum of Systematic Biology

The Museum of Systematic Biology is a scientific resource charged with cataloging and maintaining specimens of local plants and animals. Its holdings, totaling more than 145,000 specimens, provide environmental scientists and students of ecology with information about the occurrence, identification, and distribution of the species living in Orange County in particular and Southern California in general. In addition to its general holdings, the Museum is custodian for four outstanding special collections: the Sprague Conchological Collection, the Cassidy-Lewis Herpetological Collection, and the Theodore Hower and Charles Rudkin Lepidoptera Collections. Additional information is available from the Museum; telephone (714) 856-7420.

Laser Microbeam Program

The Laser Microbeam Program (LAMP) was established on the Irvine campus in 1979 as a national facility in the area of laser microbeam biotechnology. LAMP functions as a research, training, and service facility, and provides interaction between the laser industry and the academic biomedical research community. The facility serves as a resource to promote research in cell biology, developmental biology, neurobiology, genetics, oncology, and clinical medicine. Microsurgery is performed at subcellular, cellular, and tissue levels. The program is conducted in the Beckman Laser Institute and Medical Clinic and is funded through a grant from the Biotechnology Resources Program of the National Institutes of Health. Additional information is available from the LAMP office; telephone (714) 856-6996.

Thesaurus Linguae Graecae Project

Financed through private and federal funds, the Thesaurus Linguae Graecae (TLG) Project began in 1972. Project goals are to create the *Thesaurus Linguae Graecae*, a data bank of Greek literature from its Homeric beginnings to A.D. 1453; to conduct literary research using collected texts; and to apply technological innovation in these endeavors. 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 machine-readable form; the enhancement of automated text-verification routines; and the examination of criteria for data-capture of "nonstandard" source materials such as nonliterary (e.g., documentary) texts. TLG staff are establishing procedures to facilitate nationwide access to data-bank resources at UCI. The data bank currently contains more than 65 million words of Greek text.

The Project's close ties with the Department of Classics are evidenced by faculty participation in TLG research and TLG support of graduate students. In addition, TLG's library holdings enhance those of the University Library, and TLG-related conferences and scholarly visits afford faculty and students contacts with eminent classicists. The Project has made UCI a major source of classics research activity.

UCI Medical Center and Community Clinics

The UCI Medical Center is one of five teaching hospitals owned and operated by the University of California. It is located on a 33-acre site in the City of Orange, 13 miles from the UCI campus. UCI College of Medicine faculty and resident physicians are the professional staff for medical services at the Center. The hospital maintains inpatient and outpatient services in virtually all medical specialties and is fully accredited by the Joint Commission on Accreditation of Hospitals. UCI Medical Center is the only designated Level I tertiary trauma referral center in Orange County.

UCI Medical Center serves as the principal clinical facility for teaching and research programs for the College of Medicine. Licensed for 493 beds, UCI Medical Center currently serves 19,000 inpatient admissions, 161,000 outpatient visits, and 34,000 adult and pediatric emergency visits.

The availability of advanced technology and the nationally recognized expertise of members of the staff have made UCI Medical Center a regional referral center for the diagnosis and treatment of many medical problems. The hospital is nationally recognized for its burn center and expertise in the surgical replantation of severed limbs. In addition, the Medical Center offers special programs for high-risk pregnant women and critically ill newborns. The 24-hour Regional Poison Center provides services not available at other hospitals in Orange County. Other services include multidisciplinary cardiology and oncology programs and a comprehensive psychiatry program for adults, adolescents, and children.

Basic research in neurobiology combined with clinical expertise in neurology and neurosurgery are placing College of Medicine faculty in the forefront in the understanding and treatment of many neurological disorders, including epilepsy, cerebral palsy, and Alzheimer's disease. UCI Medical Center also is one of the primary centers for the comprehensive management of diabetes. In addition, the Medical Center has received federal approval for the use of lasers in the treatment of cancers of the head, neck, and female reproductive system, and for cardiovascular disease. Programs in research and patient care using laser technology are coordinated by the Beckman Laser Institute and Medical Clinic, located on the UCI campus.

A major redevelopment program is continuing and is designed to enhance the professional facilities and environmental setting of the Medical Center. The most recently completed areas include new intensive care units for medical, surgical, and cardiac patients, and the Medical Center lobby and gift shop. Plans for further Medical Center expansion include a new psychiatric hospital, currently under construction, to be completed in 1992. In addition, construction of phase two of the UCI Medical Pavilion will allow increased private patient care services by faculty members. The first phase, Pavilion I, houses multispecialty care facilities. It also is the interim site for the UCI Clinical Cancer Center until construction of a new facility is completed in late 1991. The Center combines outpatient care and clinical and basic research.

Comprehensive outpatient services are available on the College of Medicine campus through the UCI Medical Plaza. The facility offers multispecialty services, including cardiology, dermatology, gastroenterology, internal medicine, neurology, obstetrics and gynecology, ophthalmology, orthopedics, and pediatrics. The Plaza also is providing a site for a new Executive Health Program for persons in the business community.

UCI clinical facilities also include the Community Clinic of Orange County (CCOC) in Santa Ana and the North Orange County Community Clinic (NOCCC) in Anaheim. Both clinics provide educational experiences and patient services in primary care.

Important components of UCI's medical education and research programs are also conducted at affiliated hospitals and clinics, in particular, the Veterans Administration Medical Center and Memorial Medical Center, both of Long Beach.

Further information about other University-operated clinical facilities is found in the College of Medicine section.

Irvine Occupational Health Center

In 1980 the University established occupational health centers in Northern and Southern California. The purposes of these Centers are (1) to train occupational health professionals, (2) to conduct research on occupational health issues, (3) to provide clinical evaluation of the worker/patient for work-related disease, and (4) to be linked to a hazardous chemicals alert system. The Centers

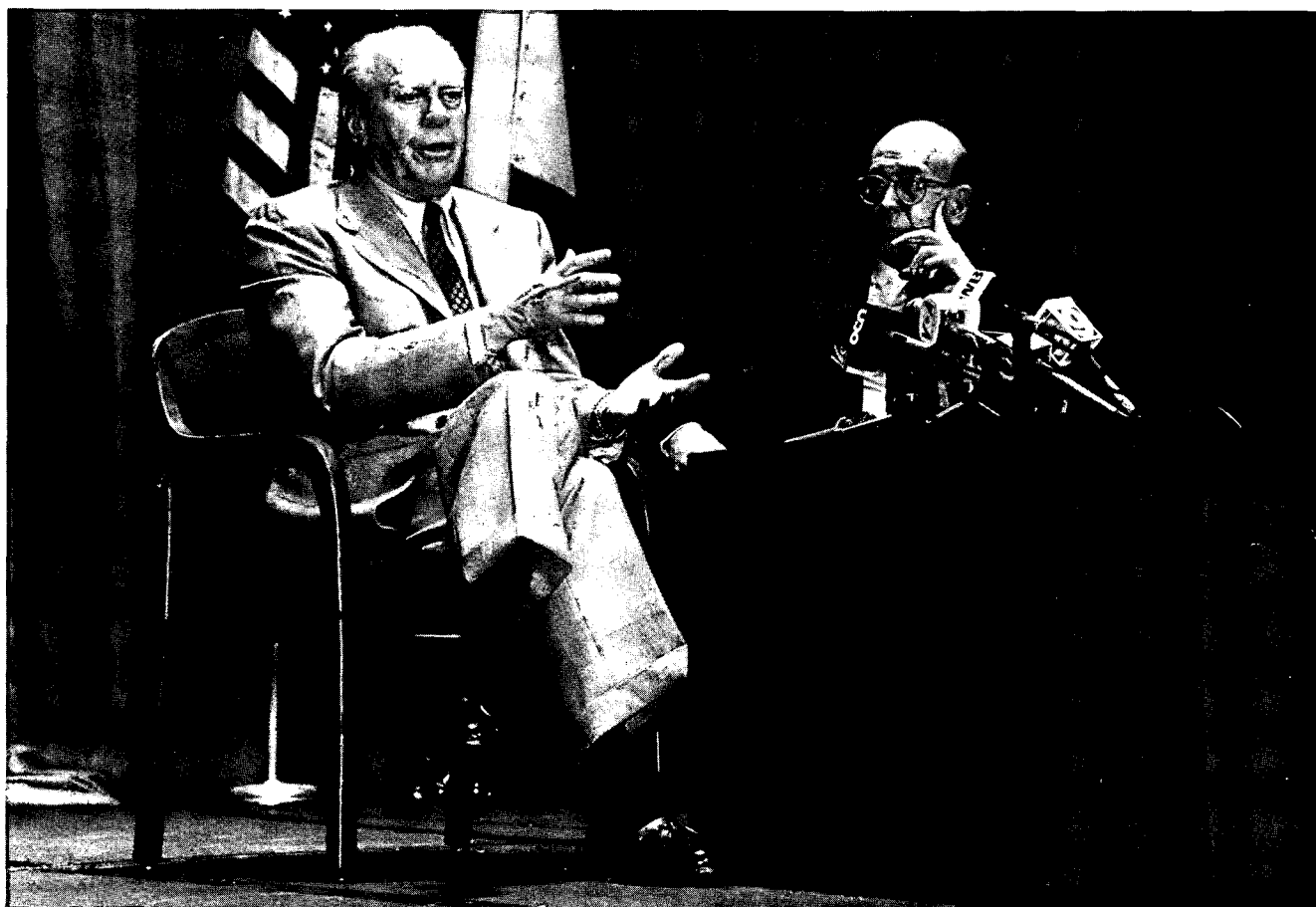


Third- and fourth-year medical students conduct well-baby examinations during their clerkship rotations at the UCI Medical Center, the principal clinical facility for teaching and research programs for the College of Medicine.

also have strong ties to the University's Schools of Medicine and Public Health.

The Irvine Occupational Health Center (IOHC) is comprised of health professionals from the University's Irvine and Los Angeles campuses. 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 Irvine campus has primary responsibilities in occupational medicine and toxicology. The Los Angeles campus has primary responsibilities in industrial hygiene, occupational epidemiology, occupational health education, and occupational health nursing.

The IOHC houses a referral clinic; faculty and staff offices; and facilities for research and teaching in industrial hygiene and work physiology. There is also classroom, library, and study space for residents in occupational medicine and other graduate students. For further information, please telephone the Center at (714) 856-8092.



Gerald R. Ford, former President of the United States, and Valéry Giscard d'Estaing, former President of France, spoke to students about the changing face of Europe as part of a symposium sponsored by the UCI Alumni Association, the Irvine Company, and the American Enterprise Institute.

Office of University Advancement

University Advancement, (714) 856-7324, is the primary office responsible for coordinating campus-community relations. Its purpose is to increase public awareness and understanding of University research, teaching, and public service programs and to develop campuswide private support. University Advancement activities include alumni relations, community relations, communications, development, government relations, marketing, and publications.

University Advancement works closely with the UCI Foundation and the UCI College of Medicine Support Foundation to plan and administer a coordinated institutional advancement program that encourages private support from individuals, corporations, and foundations. Inquiries regarding gifts and bequests should be directed to the UCI Foundation, (714) 856-6245, and the UCI College of Medicine Support Foundation, (714) 856-6354.

Key to University Advancement's success are community support groups such as the Chancellor's Club, Daniel G. Aldrich Jr. Society, and Chief Executive Roundtable. Composed of civic and business leaders, these groups provide important unrestricted private support for the campus. Other organizations under the advancement umbrella include Engineering Corporate Affiliates, Friends of the Library, Faculty Associates, Graduate School of Management Corporate Partners, Humanities Associates, Sports Associates, Social Ecology Affiliates, Town and Gown, and the Theatre Guild. Support groups for the health sciences include the

Associated Alumni of the UCI College of Medicine, Brain Imaging Center Committee, Medical Center Auxiliary, Medical Faculty Wives, Medical Research and Education Society, and Research Associates.

The UCI Alumni Association, (714) 856-7361, was founded in 1968 as a separately incorporated nonprofit organization to advance and assist the interests of UCI and its graduates. The Association assists in recruitment and recognition of students and alumni, provides financial and moral support to the University, and disseminates information about the University and its objectives. Through its various chapters and in cooperation with other campus organizations, the Association seeks to provide alumni a lasting bond with the University. It also promotes continuing education for all UCI graduates and sponsors symposia, seminars, and programs that support the Association and its objectives.

University Advancement also is responsible for informing the public about the University's achievements, academic accomplishments, events, and programs. University Advancement implements and coordinates a sustained public information effort through various channels of communication, including the public media. On behalf of the campus and in cooperation with the UCI Alumni Association, University Advancement publishes the quarterly *UCI Journal*, a tabloid for alumni and friends of the University and interested community members. It also publishes *UCIems*, a campus newsletter and calendar for faculty, students, and staff.

How to Use the Catalogue

The *UCI General Catalogue* contains general administrative and academic information, descriptions of schools and departments and their curricula, and descriptions of student activities and services.

Because the *Catalogue* must be prepared well in advance of the year it covers, changes in some programs inevitably will occur. The selection of courses to be offered each quarter is subject to change without notice, and some listed courses are not offered each year. The quarterly *Schedule of Classes*, a publication available from the Registrar's Office shortly before registration begins each quarter, provides more current information on classes to be offered, instructors, how to enroll, enrollment restrictions (for example, open to majors only, or consent of instructor required), class hours, room assignments, and final examination schedules. 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 *UCI General Catalogue* is divided into five main concepts (details are found in the Table of Contents):

1. Introduction to UCI
2. Preadmission Matters
3. Information for Admitted Students
4. Information on the Office of Research and Graduate Studies
5. Schools and Programs: Instruction and research programs at UCI focus on five fundamental areas of knowledge, while at the same time providing for interdisciplinary and professional study. In the *Catalogue*, the five basic Schools are presented first: Biological Sciences, Fine Arts, Humanities, Physical Sciences, and Social Sciences. Programs covering interdisciplinary and professional studies are presented next: Information and Computer Science, Social Ecology, Engineering, Management, Medicine, and Teacher Education. The program in physical education is presented last.

Included in the academic unit descriptions 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, the institutions from which they received their highest degrees, and their areas of academic interest.
- c. Requirements for undergraduate and graduate degrees, including those for majors and minors.
- d. Additional areas of study (referred to as concentrations, specializations, emphases, tracks, modules, or options).
- 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.
- f. Courses offered, divided into undergraduate and graduate course listings; those units that are departmentalized present their courses according to the department.

Course Listings

Undergraduate courses are classified as "lower division" and "upper division." "Lower division" refers to courses numbered 1-99; "upper division" refers to courses 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 academic or other prerequisites have been met. Prerequisites for courses should be noted carefully; 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 course number usually designates a laboratory course. The letter H preceding a course number usually designates an honors course.

The "(4)" or "(4-4-4)" designation following the course title indicates the unit credits toward the minimum 180 quarter units needed to graduate. Each "4" represents four quarter units. Some courses give other than four units of credit; for example, two, five, or a range of from one to 12 units can be granted.

The letters F, W, or S after the course number and title indicate the quarter(s) in which the course will be offered: fall, winter, or spring. The word "Summer" appears if the course is offered in Summer Session of the academic year covered by this issue of the *UCI General Catalogue*. While efforts have been made to provide information on when a course is offered, such information is not always available in time for inclusion in the *Catalogue*. The designation "(4) F, W, S" indicates a single course offered that can be taken only once for credit; a "(4-4-4) F, W, S" designation indicates that credit may be earned in each quarter.

When a course is approved for satisfaction of the UCI breadth requirement, the breadth category is indicated by a roman numeral in parentheses at the end of the course description. Courses which have been approved to fulfill the upper-division writing requirement are *not* designated in this *Catalogue*. However, they are designated in the quarterly *Schedule of Classes* with a W following the course number. Students should refer to the *Schedule of Classes* for a complete listing of approved upper-division writing courses.

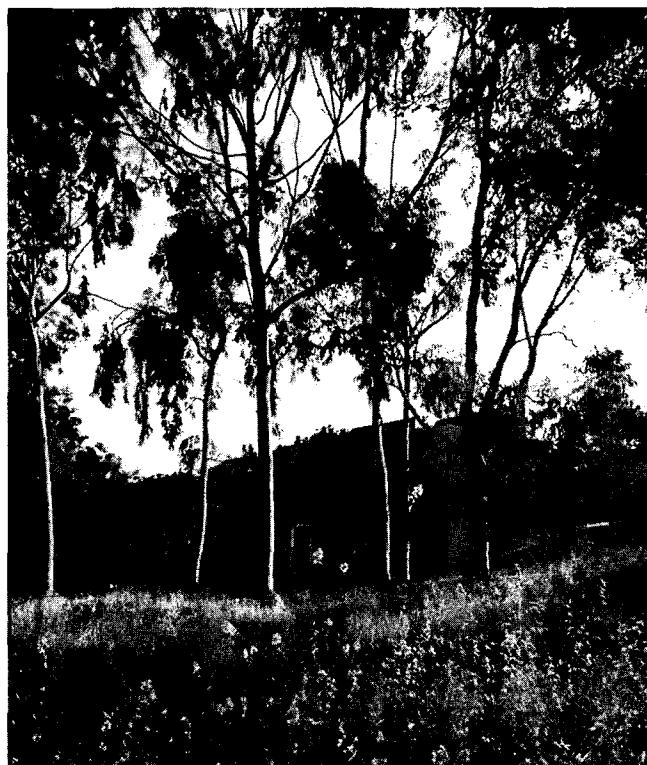
Contact with UCI

Office of Relations with Schools and Colleges

The Office of Relations with Schools and Colleges (ORSC) is a division of Educational Relations and Academic Services (ERAS) under the Office of Academic Affairs. The mission of ORSC is to stimulate and advance cooperative educational relationships between UCI and California schools and colleges. ORSC works to improve the preparation of prospective students for higher education, and to promote their access to and success at UCI.

Interinstitutional Relations

ORSC staff are involved in: (1) programs to enhance the professional development of educators in grades K-12 (California Principals Conference, Academic Fellows); (2) intersegmental activities and programs for school improvement (Sherman Indian High School Partnership); (3) various educational organizations designed to facilitate regional cooperation; and (4) secondary school accreditation reviews through the Western Association of Schools and Colleges.



A slice of campus life: Welcome Week, held prior to the beginning of fall quarter classes, offers academic and social activities for new and returning students; the majority of the UCI Library's 1.4 million books are easily accessible on open shelves; on-campus residence halls and apartments are home to nearly 4,600 students.

Outreach Services

ORSC staff (1) advise prospective students, their parents, teachers, counselors, and school administrators regarding academic programs, admission, and major requirements, and assist them with UC application and enrollment processes; (2) increase public awareness of UCI 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) interpret University policies and procedures specific to undergraduate enrollment; (5) gather information about educational developments in the schools; (6) assist prospective transfer students and community college faculty and staff through the Transfer Student Services Office; (7) sponsor an undergraduate reentry program for nontraditional students that provides assistance to adults returning to or first experiencing higher education after an extended break in their education; (8) participate in activities and projects designed to increase the enrollment and enhance the academic success of students from groups currently underrepresented at the University (Scholars in Training); and (9) provide academic and admissions information to distant areas through alumni representatives in conjunction with the Alumni Office.

On-Campus Services

ORSC staff (1) promote liaison and curricular articulation between UCI and the 106 California community colleges; (2) offer student-led campus tours; (3) host programs for prospective students and educational groups including "UCI Senior Day" (fall) for high school seniors and "UCI Preview" (spring) for high school freshmen through juniors; (4) maintain an honors outreach program for high-achieving prospective UCI students including Honors Day (spring); (5) inform UC and UCI administrators and faculty of developments in California schools and community colleges; and (6) provide consultative services to campus departments wishing to provide programs for schools and colleges or special recruitment for specific majors or programs.

Additional information about ORSC services is available from the office; telephone (714) 856-5518.

Transfer Student Services Office

The Transfer Student Services Office (TSSO), a component of ORSC, provides advice and guidance to prospective UCI transfer students and serves as a referral base for newly enrolled transfer students with questions, problems, or concerns. Prospective transfer students are encouraged to meet with TSSO staff to learn about UCI admission requirements, application procedures, preparation for UCI academic programs, and information on various campus services and support programs. Additional information is available from TSSO; telephone (714) 856-7821.

Reentry Student Services

Reentry Student Services, a component of ORSC, serves prospective students who are 25 years or older, and who either have experienced a significant break in their education, or wish to consider higher education for the first time. Services include preadmission counseling, academic advisement, and referrals to appropriate support services. Additional information is available from ORSC; telephone (714) 856-5518.

Campus Tours

Student-led tours of the campus are conducted weekdays at noon year round; Saturday tours are offered during the fall and spring. The Campus Tours Coordinator in the Office of Relations with Schools and Colleges, telephone (714) 856-5519, can provide further information or set up a special tour.

Educational Opportunity Program/ Student Affirmative Action-Outreach

The Educational Opportunity Program/Student Affirmative Action-Outreach (EOP/SAA) Office is responsible for carrying out a fundamental goal regarding the University's commitment to realizing and expanding equal educational opportunity for low-income and underrepresented groups residing in California. The Office is responsible for informing and advising prospective applicants about UCI's academic programs, about eligibility requirements consistent with UC Academic Senate regulations, and about special action admission criteria. The Office also carries out academic development programs designed to expand the future UC eligibility pool of underrepresented students. These pre-enrollment services are designed to improve the academic readiness of prospective students for higher education, and to promote their enrollment at and graduation from UCI. Additional information is available from EOP/SAA; telephone (714) 856-7484.

Celebrate UCI

Each spring, UCI hosts its annual open house—"Celebrate UCI"—for everyone interested in learning more about the campus. Among the day's events are the Wayzgoose Medieval Fair, UCI Medical Plaza and College of Medicine Health Fair, and a variety of special programs for prospective students and their parents. Other features of the day include music, food and game booths, jugglers, and mimes, as well as tours, lectures, and presentations. Information on admissions, housing, and financial aid, guided tram tours of the campus, and natural history tours of the San Joaquin Freshwater Marsh also are available. For additional information, dates, and times, telephone the Student Activities Office, (714) 856-5181.

University Program for High School Scholars

The University Program for High School Scholars (UPHSS) is a special opportunity offered to highly prepared and gifted students by UCI. High school seniors, and occasionally, juniors, have the opportunity to expand their education by enrolling concurrently at UCI in order to pursue academic interests beyond those available at their high schools. UPHSS enables participants to sample UCI's nationally acknowledged academic resources, to participate in University life, and to interact with outstanding UCI faculty and students without disrupting high school academic and social involvements. UPHSS is particularly valuable for talented young people who are intellectually ready for university-level work, who have eagerly and successfully completed the "college-prep" courses offered by their high school, and who are looking for new academic challenges. UCI makes every effort to encourage and facilitate the participation of qualified students from all ethnic and socioeconomic backgrounds. Additional information is available in the Undergraduate Admissions section and from the UPHSS coordinator, telephone (714) 856-4543.

Undergraduate and Graduate Degrees and Areas of Study

Degree Titles

Subject Area	Degree ¹	Academic Unit Granting the Degree
Administration	Ph.D.	Graduate School of Management
Anthropology	B.A.	School of Social Sciences
Applied Ecology	B.A.	School of Biological Sciences jointly with the Program in Social Ecology
Art History	B.A.	School of Fine Arts
Biological Sciences	B.S., M.S. ² , Ph.D.	School of Biological Sciences
Business Administration	M.B.A., M.B.P.A. ⁴	Graduate School of Management
Chemistry	B.S., M.S. ^{2,3} , Ph.D.	School of Physical Sciences
Chinese Language and Literature	B.A.	School of Humanities
Civil Engineering	B.S.	School of Engineering
Classical Civilization	B.A.	School of Humanities
Classics	B.A., M.A. ² , Ph.D.	School of Humanities
Comparative Culture	B.A., M.A. ² , M.A.T. ⁴ , Ph.D.	School of Social Sciences
Comparative Literature	B.A., M.A. ² , Ph.D.	School of Humanities
Dance	B.A., M.F.A.	School of Fine Arts
Drama	B.A., M.F.A.	School of Fine Arts
Economics	B.A., M.A. ² , Ph.D.	School of Social Sciences
Education	Credential Programs Only	Office of Teacher Education
Electrical Engineering	B.S.	School of Engineering
Engineering	B.S., M.S., Ph.D.	School of Engineering
English	B.A., M.A. ² , M.F.A., Ph.D.	School of Humanities
Environmental Toxicology	M.S., Ph.D.	College of Medicine
Film Studies	B.A.	School of Humanities
Fine Arts	B.A., M.F.A.	School of Fine Arts
French	B.A., M.A. ² , Ph.D.	School of Humanities
Genetics Counseling	M.S.	College of Medicine
Geography	B.A. ⁴	School of Social Sciences
German	B.A., M.A. ² , Ph.D.	School of Humanities
History	B.A., M.A., Ph.D.	School of Humanities
Humanities	B.A.	School of Humanities
Information and Computer Science	B.S., M.S. ² , Ph.D.	Department of Information and Computer Science
Japanese Language and Literature	B.A.	School of Humanities
Linguistics	B.A.	School of Social Sciences
Mathematics	B.S., M.S., Ph.D.	School of Physical Sciences
Mechanical Engineering	B.S.	School of Engineering
Medicine	M.D.	College of Medicine
Music	B.A., B.Mus.	School of Fine Arts
Pharmacology and Toxicology	M.S., Ph.D.	College of Medicine
Philosophy	B.A., M.A. ² , Ph.D.	School of Humanities
Physics	B.S., M.S. ² , Ph.D.	School of Physical Sciences
Political Science	B.A., Ph.D.	School of Social Sciences
Psychology	B.A., Ph.D.	School of Social Sciences
Public Administration	M.B.P.A. ⁴ , M.P.A. ⁴	Graduate School of Management
Radiological Sciences	M.S., Ph.D.	College of Medicine
Russian	B.A.	School of Humanities
Social Ecology	B.A., M.A., Ph.D.	Program in Social Ecology
Social Science	B.A., M.A. ² , Ph.D.	School of Social Sciences
Sociology	B.A.	School of Social Sciences
Spanish	B.A., M.A., M.A.T., Ph.D.	School of Humanities
Studio Art	B.A., M.F.A.	School of Fine Arts
Urban and Regional Planning	M.U.R.P.	Program in Social Ecology

¹ Degrees: B.A. = Bachelor of Arts; B.S. = Bachelor of Science; B.Mus. = Bachelor of Music; M.A. = Master of Arts; M.A.T. = Master of Arts in Teaching; M.F.A. = Master of Fine Arts; M.S. = Master of Science; M.B.A. = Master of Business Administration; M.B.P.A. = Master of Business and Public Administration; M.P.A. = Master of Public Administration; 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 at UCI. Refer to the academic unit sections for information.

² Emphasis at the graduate level is on study leading to the Ph.D. degree. The master's degree may be awarded to Ph.D. students after fulfillment of the appropriate requirements.

³ A joint master's degree program with the Office of Teacher Education leads to an M.S. in Chemistry and a Teaching Credential.

⁴ Admission for the 1991-92 academic year is not offered.

Undergraduate Majors, Minors, Concentrations, and Associated Areas of Study

Students are urged to become informed of and understand all requirements concerning their intended majors, minors, concentrations, and/or associated areas of study. Special restrictions apply to some majors and minors; for example, some minors require formal application or declaration by students. Other minors may be completed without such formalities.

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 and formal concentrations. Some concentrations are available in more than one academic unit.

A **minor** consists of a coordinated set of courses (seven or more) 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. UCI offers three **interdisciplinary minors**. The minor in Global Peace and Conflict Studies is focused in the School of Humanities, the School of Social Sciences, and the Program in Social Ecology. The minors in Latin American/Chicano Studies and in Women's Studies are focused in the School of Humanities. All minors, including interdisciplinary minors, are available to all students regardless of their major, with the exception that students may not minor in their major. *Minors are listed on a student's transcript but are not listed 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 pursued by a student appears on the transcript but not on the baccalaureate diploma. Concentrations are usually 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 by a student appears on the transcript but not on the baccalaureate diploma.

In addition to the formal minors, concentrations, and specializations, other associated areas of study are available. These include emphases, tracks, modules, or options.

School of Biological Sciences

Majors:

- Biological Sciences
- Concentration: Ecology and Environmental Biology
- Applied Ecology (offered jointly with the Program in Social Ecology)

School of Fine Arts

Majors:

- Art History
- Dance
- Specializations:
 - Choreography
 - Hispanic
 - History
 - Performance
 - Teaching
- Drama
- Fine Arts (Interdisciplinary)

Music

Specializations (B. Mus. only)

- Bassoon
- Clarinet
- Contrabass
- Flute
- French Horn
- Harp
- Lute and Guitar
- Oboe
- Percussion
- Piano
- Saxophone
- Trombone
- Trumpet
- Tuba
- Viola
- Violin
- Violoncello
- Voice

Special String Performance

Studio Art

Minors:

- Art History
- Dance
- Drama
- Music

Concentrations:

- Medieval Studies (in combination with any major in the School of Fine Arts or the School of Humanities)
- Religious Studies (in combination with any major in the School of Fine Arts, the School of Humanities, or the School of Social Sciences)

Graduate School of Management

Major: Only graduate degrees are offered

Minor: Management

3-2 Program: available to outstanding undergraduates in all majors except Engineering

School of Humanities

Majors:

- Chinese Language and Literature
- Classical Civilization
- Classics
 - Emphases:
 - Greek
 - Latin
 - Linguistics
- Comparative Literature
- English
 - Emphases:
 - Literary Criticism
 - Writing
- Film Studies
- French
 - Emphases:
 - Literature and Culture
 - Linguistics
- German
 - Emphases:
 - Literature
 - Linguistics
- History

Humanities (Interdisciplinary)
 Individualized Programs
 Women's Studies
 Japanese Language and Literature
 Philosophy
 Russian

Emphases:
 Literature
 Linguistics
 Civilization

Spanish

Emphases:
 Literature and Culture
 Linguistics

Bilingualism and English as a Second Language

Minors:

Chinese Language and Literature
 Classical Civilization
 Comparative Literature
 English
 Film Studies
 French
 German
 Global Peace and Conflict Studies (Interdisciplinary)
 Greek
 History
 Italian
 Japanese Language and Literature
 Latin
 Latin American and Chicano Studies (Interdisciplinary)
 Philosophy
 Portuguese
 Russian Area Studies
 Russian Language
 Spanish
 Women's Studies

Concentrations:

Medieval Studies (in combination with any major in the School of Fine Arts or the School of Humanities)
 Religious Studies (in combination with any major in the School of Fine Arts, the School of Humanities, or the School of Social Sciences)

School of Physical Sciences

Majors:

Chemistry
 Mathematics
 Specializations:
 Applied Mathematics
 Mathematical Statistics
 Pure Mathematics

Physics

Concentrations:
 Applied Physics
 Biomedical Physics
 Specialization:
 Astrophysics

Minors:

Applied Mathematics
 Mathematical Statistics
 Pure Mathematics

School of Social Sciences

Majors:

Anthropology
 Comparative Culture

Economics
 Geography
 Linguistics
 Political Science
 Psychology
 Social Science
 Sociology

Minors:

Anthropology
 Comparative Culture
 Global Peace and Conflict Studies (Interdisciplinary)
 Linguistics
 Political Science
 Psychology
 Sociology

Concentration: Religious Studies (available in combination with any major in the School of Fine Arts, the School of Humanities, or the School of Social Sciences)

School of Engineering

Majors:

Civil Engineering
 Specializations:
 Environmental Engineering
 Structural Engineering
 Transportation Engineering
 Water Resources Engineering
 Electrical Engineering
 Specializations:
 Computer Engineering
 Electro-optics, Solid-State Devices
 Power Systems
 Systems and Signal Processing
 Engineering
 Specializations:
 Chemical Engineering
 Computer Graphics
 Mechanical Engineering
 Specializations:
 Aerospace Engineering
 Combustion/Propulsion
 Heat Transfer/Fluid Mechanics
 Materials Science and Engineering
 Mechanical Systems

Department of Information and Computer Science

Major: Information and Computer Science

Program in Social Ecology

Majors:

Social Ecology
 Specializations:
 Criminology, Law and Society
 Environmental Analysis and Design
 Psychology and Social Behavior
 Applied Ecology (offered jointly with the School of Biological Sciences)

Minors:

Global Peace and Conflict Studies (Interdisciplinary)
 Social Ecology

Areas of Graduate Study

Programs of graduate study are offered in a wide range of academic disciplines and professional areas. For further information about any area, including the precise titles of the degrees conferred, consult the Index. Credentials that can be earned through the UCI Office of Teacher Education are listed separately.

Acting	German
Administration	Health Psychology
Anatomy	History
Anthropology	Human Development
Artificial Intelligence	Humanities
Biochemical Engineering	Information and Computer
Biochemistry	Science
Biological Chemistry	Linguistics
Biological Sciences	Management
Biophysical Chemistry	Mathematical Behavioral
Business Administration	Sciences
Cell Biology	Mathematics
Chemistry	Mechanical and Aerospace
Chicano/Latino Literature	Engineering
Choreography	Medicine
Civil Engineering	Microbiology
Classics	Molecular Biology
Cognitive Sciences	Molecular Genetics
Comparative Culture	Music
Comparative Literature	Music Theatre
Comparative Physiology	Neurobiology
Computer Algorithms and	Neurosciences
Data Structures	Occupational Health
Computer Software	Pharmacology and Toxicology
Computer Systems Design	Philosophy
Computing Organizations,	Physical Sciences
Policy, and Society	Physics
Creative Writing	Physiology and Biophysics
Criminal Justice	Poetry
Criminology, Law and	Political Psychology
Society	Political Science
Critical Theory	Politics and Society
Dance	Psychobiology
Dance History	Psychology
Design/Production	Public Choice
Developmental Biology	Radiological Sciences
Developmental Psychology	Regional Planning
Directing	Social Behavior
Drama	Social Ecology
Ecology	Social Networks
Economics	Social Relations
Electrical and Computer	Social Science
Engineering	Sociology
Engineering	Spanish
English and American	Studio Art
Literature	Teaching/Administration of
Environmental Analysis	Dance
Environmental Design	Transportation Economics
Environmental Psychology	Urban Planning
Environmental Toxicology	Virology
Evolutionary Biology	
Experimental Psychology	
Facility Planning and	
Management	
Fiction	
Fine Arts	
French	
Genetics	
Genetics Counseling	

Credential Programs: Teacher Education

Programs leading to credentials are generally taken as one year of postbaccalaureate study but may be taken as part of an undergraduate program.

Multiple Subject Instruction (elementary)

Multiple Subject Instruction Bilingual/Cross-Cultural Emphasis

Single Subject Instruction (secondary)

The following credentials require a basic credential, multiple or single subject:

Special Education, learning handicapped credential

Special Education, severely handicapped credential

Resource Specialist Certificate

Preliminary Administrative Services credential

Professional Administrative Services credential

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. 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 fine 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, requirements for majors, and course offerings. In addition to consulting the Catalogue, students are encouraged to talk to academic counselors and faculty advisors about the opportunities which are open to them. They may go to any department in order 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 Career Planning and Placement Center and by the Office of the Dean of Undergraduate Studies, as well as by 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 consid-

ered. 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 interested in pursuing a double major should check with their academic advisor.

Each school or program 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 prerequisite and program planning. 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.

Unaffiliated (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 until they have been on campus for a while. Such students participate in the General Studies Advising Program (GSAP) which is administered by the Office of the Dean of Undergraduate Studies. The goal of GSAP 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 what major to declare, the student should know what programs UCI offers and have some experience with them, have a good knowledge of his or her abilities and interests, have clear educational goals, and have a good sense of his or her vocational goals and of the academic programs at UCI that will provide appropriate preparation for them. Students in GSAP receive individualized 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 possible careers.

Preprofessional Preparation

Law

Law schools want to 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 excellence in any academic program. A good record in physics or classics, for example, will be preferred over a mediocre record in history or political science. The majority of 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 courses, for example) build skills that are the key to doing well on the LSAT, succeeding in law school, and entering the legal profession.

UCI offers a number of law-related courses that students in any major may take. The School of Humanities offers courses in logic and the philosophy of 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 Program in 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

offers its majors the opportunity to apply theories learned in the classroom to actual problems through its field study program.

Students interested in applying to law school after completing the baccalaureate degree should know that law schools look closely at five aspects of a student's application: grades, Law School Admissions Test (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 career opportunities should one's career goals change or should experience with law school result in a decision not to enter the field of law.

Medicine and Other Health-Related Sciences

Although leaders in health science education strongly recommend that students obtain a bachelor's degree prior to admission to the health sciences, there is no preferred major. Many students who plan to enter the health professions major in Biological Sciences because much of the basic course work for that major is the same as the preparation required for medical school admission; however, students may major in any academic field as long as they also take the courses required by professional health science schools. The minimum amount of undergraduate preparation required by most medical and health-related schools includes one year each of English, biology with laboratory, general chemistry with laboratory, organic chemistry with laboratory, physics with laboratory, and college mathematics, especially calculus and statistics. Courses in cell or molecular biology, biochemistry, genetics, developmental physiology or comparative anatomy, and vertebrate embryology are recommended, as is course work in computer science. In addition, some health sciences schools have certain nonscience course requirements or recommended courses in, for example, English and/or a foreign language. Facility with the Spanish language is very helpful in California medical schools and in other areas of the United States with large Hispanic populations.

Although many factors ultimately are considered when reviewing applicants for admission, admission committees look carefully at the following seven areas: college grade point average (science and nonscience grades are evaluated separately, and evidence of improvement in work during the undergraduate years is important); results of the new Medical College Admissions Test (MCAT), the Dental Admissions Test, and other aptitude examination scores; the student's personal essay and/or personal interview; in-depth letters of recommendation; practical experience in the health sciences, whether paid or volunteer, which is regarded favorably as an indication of exposure to and interest in the health sciences; extracurricular activities which demonstrate the applicant's ability to interact successfully with others; and research experience, especially in a biological, medical, or behavioral science.

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 medical, dental, pharmacy, optometry, podiatry, or veterinary 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 lead-

ership ability, strong problem-solving skills, effective oral and written communication skills, analytical skills, an understanding of global economic trends, and a basic knowledge of behavioral processes in organizations.

Although UCI does not offer a prebusiness program leading to an undergraduate degree, the Graduate School of Management offers a minor in Management as a supplement to any undergraduate major. This minor can provide students with a broad understanding of management theory and practice. In addition, it may be helpful to students in determining whether they wish to pursue a career in business or management or undertake further study in management at the graduate level.

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 courses. Students are encouraged to undertake intensive course work in the culture, history, geography, economy, politics, and language of specific foreign countries.

Most graduate programs in business administration or management do not require prior undergraduate course work in business.

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, and evidence of leadership in school and community activities and work experience. The latter is becoming an increasingly important prerequisite for many programs.

Career Opportunities

The eight academic units at UCI which offer undergraduate education leading to the bachelor's degree provide students with a variety of 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 are meant to indicate to students the many and varied career areas pursued by UCI graduates, and to make students aware of some of the vast array of career choices available. Additional discussions of careers are presented in individual academic unit sections.

Any major can lead to any number of careers. Some examples of careers frequently led to by majors available within the academic units at UCI are listed below.

Biological Science Career Areas

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

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	Geotechnical
Biomedical	Hydraulics
Communications	Land Development and Urban Planning
Computer Architecture	Materials
Computer Software	Process Control
Construction and Project Management	Propulsion and Power
Control Systems	Public Works
Digital Signal Processing	Reliability
Earthquake Safety	Robotics
Electric Power	Structures
Electronics	Traffic
Electro-optics	Transportation
Environmental Control	Water Resources
Flood Control	Water Supply

These are some of the employment opportunities available to UCI engineering graduates. Their careers typically involve them in 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 civil, electrical, or mechanical engineering. However, they will frequently find challenging positions in related areas such as aerospace, biomedical, chemical, or 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 eventually obtain advanced degrees (at UCI or elsewhere), and almost all engage in some sort of continuing education to keep abreast of advances in technology. Many engineering graduates have used their engineering background to enter graduate programs and obtain degrees in the fields of administration, law, medicine, physics, or mathematics.

Fine Arts Career Areas

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

The exceptionally talented Fine 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 Fine Arts 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.

Humanities Career Areas

Advertising	Personnel
Banking	Public Administration
Broadcasting	Public Relations
Business	Publicity
Foreign Service	Publishing
Government Service	Research
Human Resources	Retail Sales
Insurance	Social Welfare
International Relations	Teaching
Journalism	Technical Writing
Law	Tourism
Library Science	Translating/Interpreting
Management/Administration	Writing
Marketing	

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 programs such as law, library science, 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 foreign languages exist in government, business, social service, counseling, foreign service, and international trade, among others.

Information and Computer Science Career Areas

Applications Programming	Software Maintenance
Business Applications	Software Management
Scientific Applications	Systems Analysis
Text Processing	Systems Design
Marketing of Computer-related Products	Systems Programming

Graduates of the Department of Information and Computer Science have found initial employment as programmers, software designers, systems analysts, and in sales and service of computers and software. Some graduates work for companies which manufacture computer hardware and/or develop computer software. Others work for organizations which use computers and computer services to solve a variety of problems ranging from business data processing to the simulation of integrated circuits.

Physical Science Career Areas

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

Graduates of the School of Physical Sciences have backgrounds appropriate for a variety of areas in research 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. 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	Housing Development
Air Quality Control	Law
Architecture	Management/Administration
Biostatistics	Mental Health
Clinical Psychology	Program Coordination
Corrections/Probation	Psychology
Counseling	Public Health Research
Education Support Services	Public Relations
Environmental Design	Real Estate/Development
Environmental Planning and Consulting	Research and Research Design
Epidemiology	Social Service
Government Service	Teaching
Health Service	Urban Planning
Hospital Administration	Urban Sociology
	Water Quality Control

Graduates in 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, or architectural consultants. Graduate programs of interest to Social Ecology graduates include those in 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 Science Career Areas

Banking	Marketing
Correction/Probation	Personnel
Counseling	Psychology
Finance	Public Relations
Foreign Service	Publishing
Government Service	Real Estate
Health Services	Research
Industrial Relations	Sales
Insurance	Social Service
International Affairs	Statistical Analysis
Labor Relations	Teaching
Law	Urban Planning
Library Science	Writing
Management/Administration	

Business and industry often look to the Social Science graduate 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 fre-

quently chosen career at all levels from professor to elementary school teacher. In addition, many graduates enter professional practice, becoming lawyers, psychologists, researchers, or consultants of various kinds.

Student Affirmative Action

Student affirmative action involves the provision of equal opportunities for admission and success at the University, and specifically for increased enrollment, greater retention, and higher graduation rates of underrepresented students who are regularly admissible to the University.

Educational Opportunity Program and Student Affirmative Action-Outreach

The mission of the Educational Opportunity Program/Student Affirmative Action (EOP/SAA)-Outreach Office at UCI is to enhance the academic preparation and increase the enrollment of low-income and/or underrepresented students. UCI recognizes and values the contributions of a student community that reflects the cultural, ethnic, and socioeconomic diversity of the people of California.

EOP assists students from low-income and educationally disadvantaged backgrounds. All EOP applicants, with the exception of American Indians, must be California residents. SAA is designed to increase the enrollment of underrepresented students who meet UC admission requirements.

Pre-enrollment Services. The EOP/SAA Outreach Office's two divisions, Early Academic Outreach and Immediate Outreach, provide pre-enrollment services. Early Academic Outreach developmental programs assist intermediate and high school students to become aware of university opportunities and how to prepare for admission to the University of California. Workshops, special events, and conferences are offered to program participants and their parents. Additional information is available from the Early Academic Outreach division; telephone (714) 856-7482.

Outreach counselors in the Immediate Outreach division visit high schools and community colleges throughout California and meet with prospective students, parents, teachers, counselors, and school officials to discuss information on the admission process, financial aid, housing, and academic opportunities available at UCI. Additional information is available from the Immediate Outreach division; telephone (714) 856-7484.

Admission. Prospective students interested in being considered for EOP must complete the UC application for admission, mark the appropriate box, and provide the information requested. Application fee waivers are available for low-income applicants who meet the eligibility criteria. For more information, contact your high school or community college counselor or call the EOP Office at UCI; telephone (714) 856-7484.

Financial Aid. Applicants interested in receiving information about financial aid should check the scholarship and/or financial aid sections of the UC application for admission. Additional information is available in the Financial Aid section of the *Catalogue*.

Housing. UCI gives priority consideration for on-campus housing to all new EOP and SAA students who meet the housing application deadline.

Prior to enrolling at UCI, a limited number of admitted EOP students are invited to participate in a Summer Bridge Program sponsored by the Student Academic Advancement Services (SAAS) Office. SAAS also offers a variety of services to EOP/SAA students once they enroll at UCI including advising, tutoring, and learning skills services. SAAS is described in detail in a later section.

Medical Student Support Programs

The Office of Educational and Community Programs (OECF) was established to increase the number of underrepresented and disadvantaged students in medicine. OECF plays a major role in recruiting and retaining these students through their participation in the following programs:

The **Summer Pre-Entry Program** is designed to introduce newly accepted minority and/or disadvantaged medical students to the type and volume of study materials they will encounter during their medical education.

The **Summer Premedical Program** seeks to increase the number of minority and/or disadvantaged students who are accepted into medical school by providing participants with the special skills and prerequisites needed to obtain an M.D. degree.

The **Postbaccalaureate Program** is aimed at increasing the number of minority and/or disadvantaged students who are accepted into medical school by assisting individuals who have been unsuccessful in earlier attempts to gain admission to medical school.

The **National Board Review Course** is designed to assist minority and/or disadvantaged students who have been unable to pass Part I of the National Board Examination.

Additional information on these programs is available in the College of Medicine section.

Student Academic Advancement Services

The Office of Student Academic Advancement Services (SAAS) provides students from economically disadvantaged backgrounds, who are first-generation college students, and traditionally underrepresented students with support services to help them succeed and earn their University degree.

A primary responsibility of SAAS 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, the Engineering and Computer Science Educational Laboratory (ECSEL) program, a graduate school preparatory course, and a variety of workshops are offered throughout the year by SAAS.

SAAS also sponsors and conducts the Summer Bridge Program for underprepared students who demonstrate the potential to succeed at the University. The Program is designed to provide and refine basic academic skills necessary for students to successfully complete their course work during the regular school year.

Students are encouraged to make appointments with the Office of Student Academic Advancement Services; telephone (714) 856-6234.

Graduate and Professional Opportunity Program

Through the Graduate and Professional Opportunity Program (GPOP), steps are taken to increase the participation of students from traditionally underrepresented groups in graduate education.

The University has identified African-Americans, Mexican-Americans/Chicanos, American Indians/Native Americans, Filipinos, and Latinos as the most severely underrepresented groups, and it recognizes that Asian-Americans and women are underrepresented in certain fields.

GPOP offers several fellowships for new and continuing graduate students. Eligibility is based on demonstrated scholastic achievement, full-time status, and U.S. citizenship. Students may be asked to provide verification of ethnicity.

Assistance is offered during the admission process, and every effort is made through GPOP advising and support to ensure that all students will have the opportunity to attain their academic objectives.

Expenses and Fees

Estimated Expenses

The range of estimated nine-month expenses for students attending UCI during the 1991-92 academic year follows:

Student Status	Living Arrangement	Estimated Nine-Month Expenses ¹
Undergraduate	On Campus	\$ 11,070
	Off Campus	10,905
	At Home	7,020
Graduate	On Campus	12,565
	Off Campus	14,250
	At Home	8,005
Medical ²		
First Year (10 months)	On Campus	12,993
	Off Campus	15,840
	At Home	8,900
Second Year (10 months)	On Campus	15,127
	Off Campus	17,974
	At Home	11,034
Third Year (12 months)	On campus	16,691
	Off Campus	20,177
	At Home	11,779
Fourth Year (12 months)	On Campus	16,520
	Off Campus	19,936
	At Home	11,608

¹ Includes fees.

² Student expense detail is available from the College of Medicine Financial Aid Office.

NOTE: For nonresidents of California, the above estimated expenses apply, plus \$7,699 annual Nonresident Tuition.

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 and are intended only as a guide in computing average expenses. Additional information on estimated expenses is in the *Financial Aid Handbook* available in the Financial Aid Office.

Fees

Fees for the 1991-92 academic year are shown in the accompanying table. Undergraduate, graduate, and first- and second-year medical student fees are based on three quarters of attendance. Third- and fourth-year medical student fees are based on four quarters of attendance.

Under terms of the Alan Pattee Scholarship Act, a surviving child of a California resident who died as a result of accident or injury incurred in the performance of active law enforcement or active fire suppression and prevention duties is eligible to apply for waiver of certain fees. Additional information concerning this Act is available from the Registrar's Office.

Payment of Fees

Fees for each quarter are due and payable in advance within deadlines published in the *Schedule of Classes*. A student will not be officially enrolled in classes or receive any University benefits until fees are paid in full. See the sections on Fee Refunds and on Enrollment and Other Procedures for information on how to cancel or withdraw from UCI.

The **University Registration Fee** is \$231 per quarter. The full fee is required of all students regardless of the number of courses taken. This fee, which must be paid at the time of registration, is a charge to each student for 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 one-half of the Registration Fee.

The \$100 advance deposit on the Registration Fee (Undergraduate Acceptance of Admission Fee), required of new undergraduates, is applied to the full fee when the student registers. Continuing and returning students are required to pay all outstanding fines and other debts, in full, before they pay their Registration Fee for an upcoming term.

Medical 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** is \$527 per quarter for all full-time undergraduate and graduate students. Medical 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 will be the same as that of the previous spring quarter.

The **Professional Student Fee** is \$126 for the fall quarter and \$125 per quarter for the winter and spring quarters for all medical students. The fee is required of all medical students regardless of the number of courses taken.

The **Associated Students Fee** is \$13 per quarter for undergraduates, \$9 per quarter for graduates, and \$14 per quarter for medical students. The undergraduate student fee is administered by the Associated Students of UCI; the graduate and medical student fees are administered by the Associated Graduate Students and the Medical Students Organization, respectively. 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 \$47.50 per quarter. The 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.

Fees for Academic Year 1991-92*	Under- graduate	Graduate	First- and Second-Year Medical	Third- and Fourth-Year Medical
University Registration Fee	\$ 693.00	\$ 693.00	\$ 693.00	\$ 773
Educational Fee	\$ 1,581.00	\$ 1,581.00	\$ 1,581.00	\$ 2,108
Professional Student Fee			\$ 376.00	\$ 376
Associated Students Fee / Associated				
Graduate Students Fee	\$ 39.00	\$ 27.00	\$ 42.00	\$ 56
UCI Student Center Fee	\$ 142.50	\$ 142.50	\$ 142.50	\$ 190
Bren Events Center Fee	\$ 69.00	\$ 69.00	\$ 69.00	\$ 92
Graduate Student Health Insurance Fee	—	\$ 498.00	\$ 498.00	\$ 498
	<u>\$ 2,524.50</u>	<u>\$ 3,010.50</u>	<u>\$ 3,401.50</u>	<u>\$ 4,093</u>

* Amounts for undergraduate, graduate, and first- and second-year medical student fees are based on three quarters of attendance. All fees are subject to change without notice, and the University may impose additional fees. Fee payment dates are announced in the quarterly *Schedule of Classes*. Nonresidents of California must pay an additional \$7,699 annual Nonresident Tuition.

The **Bren Events Center Fee** is \$23 per quarter. The 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 **Graduate Student Health Insurance Fee** is \$498 annually. The annual 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. 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.

The **International Student Health Insurance Fee** is \$110 per quarter. International students who have private insurance which is equal or superior to the policy provided through the University may be eligible to have the mandatory fee waived.

Fees for Part-Time Status

Undergraduate and graduate students on approved part-time status (enrollment in 10 units or less per quarter for undergraduates and in eight units or less per quarter for graduate students, including physical education units) pay the full University Registration Fee and one-half the Educational Fee paid by students on full-time status. 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 Registration and Educational Fees. Students seeking part-time status must obtain the approval of the appropriate academic dean. Part-time status can be granted only for reasons of financial need, health, or family responsibilities. Part-time status lapses at the end of each academic year; therefore, a student must reapply each year that part-time status is desired.

Miscellaneous Fees

Undergraduate Acceptance of Admission Fee ¹ (applied toward University Registration Fee)	\$100.00
Application Fee ^{1, 2}	40.00
Application Fee for Readmission ¹	40.00
Advancement to Candidacy for Ph.D.	25.00
Duplicate Diploma	22.00
Duplicate Diploma, College of Medicine	75.00
Filing Fee (graduate programs)	107.00
Special Library Borrowing Privilege (per year, nonrefundable, renewable)	50.00
Transcript of Record (per copy)	3.00
Verification of Student Status (per copy)	3.00

Service Charges

OCTD Bus Coupon Book (20 rides) ³	\$10.00
OCTD Bus Passes for students (monthly) ³	15.00
Changes in Class Enrollment after Announced	
Dates (each transaction)	3.00
Credit by Examination (each petition)	5.00
Duplicate Registration and/or Other Cards from Registration Packet (each petition)	3.00
Late Payment of Fees	50.00
Late Enrollment in Classes	50.00
Returned Check Collection	10.00
Parking Fees ⁴	
Student preferred, annual purchase only ⁵	360.00
Student general, quarterly	75.00
annual ⁵	207.00
Student resident, quarterly	75.00
annual ⁵	207.00

System of Interactive Guidance (SIGI) Fee	
for a maximum of four hours use	12.00
additional use per hour	2.50

In addition, students will be assessed replacement costs for breakage of departmentally issued equipment and supplies.

¹Nonrefundable in all cases.

²The \$40 entitles an applicant to apply to one UC campus. Applicants who are applying to more than one campus must pay an additional \$40 fee for each campus chosen.

³Sold through the UCI Parking and Transportation Services Office.

⁴UC parking systems are, in accordance with Regents policy, self-supporting auxiliary enterprises receiving no State appropriations.

⁵Fall, winter, and spring quarters.

Nonresident Tuition Fee and California Residence

Students who have not been residents of California for more than one year immediately prior to the residence determination date are charged, along with other fees, a Nonresident Tuition Fee of \$2,567 for the fall quarter and \$2,566 for the winter and spring quarters or \$7,699 per year for each year of attendance required by the curriculum, whether such year extends over three or four academic quarters. 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. Nonresident undergraduate and graduate students on approved part-time status shall pay one-half the Nonresident Tuition.

Inquiries from prospective students regarding residence requirements for tuition purposes should be directed to the Residence Deputy, Registrar's Office, 215 Administration Building, University of California, Irvine, CA 92717; telephone (714) 856-6129. No other University personnel are authorized to supply information relative to residence requirements for tuition purposes. Any student, following a final decision on residence classification by the Residence Deputy, may make written appeal to the Legal Analyst Residence Matters (300 Lakeside Drive, 7th Floor, University of California, Oakland, CA 94612-3550) within 90 days after notification of the final decision by the Residence Deputy.

General

In order to be classified as a resident for tuition purposes upon admission, an adult student, except an adult alien who is precluded by the Immigration and Nationality Act from establishing domicile in the U.S., must have established residence in California for more than one year immediately preceding the residence determination date for the term for which the student proposes to attend the University and must have relinquished any prior residence. An adult student must couple physical presence within the State of California for one year with objective evidence that such presence is consistent with the student's intent in making California the permanent home. If these steps are delayed, the one-year durational period will be extended until BOTH presence and intent have been demonstrated for one full year. Physical presence within the State solely for educational purposes does *not* constitute the establishment of California residence under State law regardless of the length of the student's stay in California.

Relevant indicia which can be relied upon to demonstrate a student's intent to make California the permanent residence include, but are not limited to, the following: registering and voting in California elections; designating California as the student's permanent address on all school and employment records, including military records if the student is in the military service; obtaining a California driver's license or, if a nondriver, a California Identification Card; obtaining California vehicle registration; paying California income taxes as a resident, including income earned outside the State; establishing an abode where the student's permanent belongings are kept within California; residing in California during summers and other academic breaks; licensing for professional practice in California; and the absence of these indicia in other places during any period for which residence in California is asserted. Documentary evidence may be required. No single factor is controlling or decisive. All relevant indicia will be considered in the classification determination.

The residence of the parent with whom an unmarried minor lives (under age 18) is the residence of the unmarried minor. When the minor lives with neither parent, the minor's residence is that of the parent with whom the minor last lived. A minor, except a minor alien who is precluded by the Immigration and Nationality

Act from establishing domicile in the U.S., may establish their own residence when both parents are deceased and a legal guardian has not been appointed. The residence of an unmarried minor who has a parent living cannot be changed by the minor's own act, by the appointment of a legal guardian, or by relinquishment of a parent's right of control.

An adult student (over the age of 18) establishes their own residence. Residence is not derived from a spouse or parents.

Procedures

New and returning students are required to complete a Statement of Legal Residence. The student's status is determined by the UCI Residence Deputy.

All students classified incorrectly as residents are subject to reclassification to nonresident status and to payment of all nonresident fees not paid. If incorrect classification results from false or concealed facts by the student, the student may be subject to University discipline. Resident students who become nonresidents must immediately notify the Residence Deputy.

Exceptions

1. If the California resident parent(s) of an eligible minor moves from California, leaving the minor in California, the minor will be entitled to resident classification as long as the minor enrolls in an institution within one year of the date the parent(s) establishes a residence outside of California. This classification will continue until the student has attained the age of majority and has resided in the State the minimum time necessary to become a resident so long as, once enrolled, the student maintains continuous attendance at an institution.
2. A student who is a U.S. citizen or eligible alien who is a minor or 18 years of age may be eligible for resident status if the student can provide evidence of the following: (1) physical presence for the required one year, (2) self-support for the entire year immediately prior to the residence determination date, and (3) evidence of an intent to make California the permanent home.
3. A student who is a U.S. citizen or eligible alien shall be entitled to resident classification if the student has lived with and been under the continuous direct care and control of any adult or adults other than a parent for not less than two years. The adult or adults having such control must have been California residents during the year immediately prior to the residence determination date. This exception continues until the student has attained the age of majority and has resided in the State the minimum time necessary to become a resident, so long as continuous attendance is maintained at an institution.
4. A student who has not been an adult resident of California for more than one year may be entitled to resident classification until the student has resided in California for the minimum time necessary to become a resident if (1) the student is the dependent child of a California parent who has established residence in the state and (2) continuous attendance is maintained at an institution.
5. Exemption from payment of the Nonresident Tuition Fee is available to the natural or adopted child, stepchild, or spouse who is a dependent of a member of the United States military stationed in California on active duty. Such exemption may be maintained until the student has resided in California the minimum time necessary to become a resident. If a student is enrolled in an institution and the member of the military (a) is transferred on military orders to a place outside the state where the member continues to serve in the armed forces of the United States, or (b) is retired as an active member of the

armed forces immediately after having been on active duty in California, the student is entitled to retain the exemption under conditions set forth above.

6. A student who is a member of the United States military stationed in California on active duty, except a member of the military assigned for educational purposes to a State-supported institution of higher education, shall be entitled to resident classification until the student has resided in the State the minimum time necessary to become a resident.
7. Children of deceased public law enforcement or fire suppression employees, who were California residents and who were killed in the course of law enforcement or fire suppression duties, may be entitled to resident status.
8. To the extent funds are available, the unmarried, dependent child under age 21 or the spouse of a member of the University faculty who is a member of the Academic Senate may be eligible for a waiver of the nonresident tuition.
9. A student who is the dependent of a full-time employee of the University of California who is permanently assigned to work outside of California may be entitled to resident classification.

Reclassification

Continuing and returning students who are classified as nonresidents for tuition purposes and believe that they will be eligible for resident status the next quarter must file a reclassification petition at the Registrar's Office no later than the fee payment deadline for that quarter. The deadline is published in the quarterly *Schedule of Classes*.

Effective fall 1985, the University of California reclassification regulations were amended as indicated below:

In determining a student's eligibility for reclassification, financial independence is included among the factors considered in evaluating intent to establish residence in California. The California Legislature has defined as financially independent those students who meet the following criteria for the current and three immediately preceding calendar years:

That the student has not been claimed as an exemption for state and federal income tax purposes by his or her parents;

That the student has not received more than \$750 from his or her parents; and

That the student has not lived in the home of his or her parents for more than six weeks in any given year.

In determining whether a student has objectively manifested intent to establish California residence, financial independence shall weigh in favor of finding California residence for reclassification purposes, and financial dependence shall weigh against finding California residence for reclassification purposes.

Financial dependence in the current and preceding calendar year shall weigh more heavily against finding California residence for reclassification purposes than shall financial dependence in earlier calendar years.

A student who is financially dependent in the current and preceding calendar year shall be found to be a California resident for reclassification purposes *only if no factors exist which evidence the student's continuing residence in another state*.

Students whose parents have been California residents for at least one year immediately prior to the residence determination date are not subject to the financial independence factor when applying for reclassification.

Financial independence is not included as a factor for graduate student teaching assistants, research assistants, and teaching associates who are employed on a 0.49 or more time basis for the quarter for which reclassification is sought.

Time Limitation on Providing Documentation. If additional documentation is required for either an initial residence classification or a reclassification but is not readily accessible, the student will be allowed a period of time no later than the end of the applicable term to provide such documentation.

Inquiries and Appeals. The student is cautioned that this summation is not a complete explanation of the law regarding residence. The student should also note that changes may have been made in the rate of nonresident tuition and the residence requirements between the time this catalogue statement is published and the relevant residence determination date. Regulations have been adopted by The Regents, and a copy is available for inspection in the Registrar's Office.

Fee Refunds

Student Fee Refunds

Students who pay fees for a regular academic quarter and then decide to withdraw from the University must submit a Cancellation/Withdrawal form, together with their identification card for the current quarter, to the Registrar's Office after obtaining the signatures of their academic dean and, for undergraduate students, the University Ombudsman. Medical students must submit the form to the Curricular Affairs Office in the College of Medicine. This form serves two purposes: (1) a refund of fees, if applicable; and (2) automatic withdrawal from classes.

The effective date of withdrawal used in determining the percentage of fees to be refunded is the date on which the student submits the Cancellation/Withdrawal form to the Registrar's Office, or, in the case of medical students, to the Curricular Affairs Office. It is presumed that no University services will be provided to the student after that date. Registration fees are refunded as follows:

New Undergraduate Students. Prior to the first day of instruction, fees are refunded in full except for the \$100 Statement of Intent to Register deposit. The \$100 Statement of Intent to Register deposit and International Student Health Insurance Fee (if applicable) are withheld once the quarter begins. The refund of the Registration Fee, Educational Fee, Associated Students Fee, UCI Student Center Fee, Bren Events Center Fee, and Nonresident Tuition Fee (if applicable) is prorated as shown.

Continuing and Returning Undergraduate and New, Continuing, and Returning Graduate Students. Prior to the first day of instruction, fees are refunded in full, except for a \$10 service charge. The Graduate Student Health Insurance Fee (if applicable) and International Student Health Insurance Fee (if applicable) are withheld after the quarter begins. The refund of the Registration Fee, Educational Fee, Professional Student Fee (if applicable), Associated Students or Associated Graduate Students Fee, UCI Student Center Fee, Bren Events Center Fee, and Nonresident Tuition Fee (if applicable) is prorated as shown.

Calendar days from first day of instruction	Refund
1-14	80 percent
15-21	60 percent
22-28	40 percent
29-35	20 percent
over 35	no refund

Claims for 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 and are mailed to the student generally four to six weeks after the official notice of withdrawal is initiated.

If any portion of a student's fees has been paid by the University or outside sources, that portion of the refund will be returned directly to the source of those funds. Students who are receiving financial aid and withdraw from UCI during a quarter are required to repay a portion of their aid based on the same schedule as UCI's refund policy.

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; almost 45 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 financial aid through the Financial Aid Office. In addition to awarding aid on the basis of financial need, the Office also offers some scholarships based on academic excellence.

Students who receive financial aid may receive funds from one or more of the following sources: scholarships, grants, loans, and work-study. These sources are described briefly in the following sections; more detailed information can be obtained from the Financial Aid Office.

To obtain financial aid, new and continuing students must file the Student Aid Application for California (SAAC) and the necessary supporting documents each year. Students are encouraged to apply as early as possible after January 1. The SAAC is available at high schools, local colleges and universities, and at the UCI Financial Aid Office. Information regarding the application process, deadlines, and financial aid programs for undergraduate, graduate, and medical students may be found in the *Financial Aid Handbook*. The Handbook is mailed to entering students in December and is available to continuing students in January in the Financial Aid Office. The priority deadline for loans, work-study, and most grants is March 2. The University expects the student and the parent (or spouse) to contribute toward the educational costs to every extent possible. For dependent students, an analysis of the SAAC 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/or, 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 are the major factors considered in the analysis. Assets include, but are not limited to, equity in real estate; stocks, bonds, and other securities; business and farm equity; and cash, savings, and checking accounts. Income includes wages, salaries, interest, dividends, and nontaxable income such as Social Security and Veterans' benefits.

All undergraduate financial aid applicants are required to apply for a Pell Grant, and in addition 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



Assistant Professor Rae Linda Brown's History of Jazz course (Music 78) fulfills UCI's multicultural breadth requirement.

extension, based on the availability of funds. Examples of such special expenditures include transportation costs for a field study assignment, special shoes for a dance class, or special equipment for disabled students.

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 Financial Aid Office. These requirements are separate and distinct from UCI's policy regarding satisfactory academic progress.

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	Second Year	Third Year	Fourth Year	Fifth Year
1.85	1.90	1.95	1.975	2.00
Graduate students				3.0
Medical students				2.0

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:

Year	Units/ Quarter	End of Year Total	Cumulative Total
1	8 *	24	24
2	9 *	27	51
3	12	36	87
4	15	45	132
5	16	48	180

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

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

Medical Students—Regular Curriculum Clock-Hours:

Year	End of Year Total	Cumulative Total
1	978	978
2	838	1,816
3	1,200	3,016
4	1,200	4,216

Medical Students—Extended Curriculum Clock-Hours:

Year	End of Year Total	Cumulative Total
1	489	489
2	489	978
3	838	1,816
4	1,200	3,016
5	1,200	4,216

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

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.

3. Quarter Limits for Eligibility

All financial aid applicants exceeding the following quarter limits will be ineligible for financial aid consideration.

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 will have transcripts from previous postsecondary institutions evaluated to determine the number of remaining quarters of financial aid eligibility at UCI.
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.

NOTE: Students will not be granted additional quarters of eligibility solely by reason of changing their field of study or pursuing more than one major.

Graduate students:

1. Limited Status (California educational credential) students: four quarters of academic year attendance.
2. Limited Status (noncredential) students: four quarters of academic year attendance.

3. Master's degree designed for completion in:

- a. three quarters: five quarters of academic year attendance.
- b. six quarters: eight quarters of academic year attendance.
- c. nine quarters: eleven quarters of academic year attendance.

4. Ph.D. students will be eligible for 21 quarters of need-based financial aid following the completion of their baccalaureate degree.

NOTE: Students will not be granted additional quarters of eligibility solely by reason of changing their field of study or pursuing more than one major.

Medical students:

1. Incoming students in their first year of attendance will be eligible for financial assistance for a total of four years.
2. College of Medicine students who have been approved for Extended Curriculum will be eligible for financial assistance for a total of five years.
3. Advanced standing transfer students will have transcripts from previous postsecondary institutions evaluated to determine remaining quarter/quintiles of financial aid eligibility.

NOTE: Students will not be granted additional quarters of eligibility solely by reason of changing their field of study or pursuing more than one major.

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. A total below the minimum cumulative GPA 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 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 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 or the end of summer session. Eligibility for the following academic year will be dependent upon clearing the unit deficiency. (See “Quarterly Unit Deficiency and Its Effect on Pell Grant and Cal Grant” below.)
2. Academic year totals—units and GPA
The Financial Aid Office will verify the cumulative totals for units and GPA after the conclusion of spring quarter. Students who have unit or GPA deficiencies will be required to make up the deficiency prior to receiving any financial aid funds, including funds that would also be used for payment of fees.
3. Quarter limits of eligibility
At the end of the quarter students will be notified by the Financial Aid Office 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.

Quarterly Unit Deficiency and Its Effect on Pell Grant and Cal Grant A and B Recipients

1. Pell Grant
Students receiving a Pell Grant must be enrolled in a minimum of 12 units each quarter. The Financial Aid Office will verify unit totals for all Pell Grant recipients at the conclusion of the quarter. The Pell Grant unit requirement *does not* provide a probationary period in which the student may make up the deficiency. Students who are enrolled for less than 12 units at the conclusion of the quarter will have their Pell Grant award reduced as follows:

- 11.9–9.0 units will receive three-fourths of the Pell Grant
- 8.9–6.0 units will receive one-half of the Pell Grant
- 5.9–0.0 units will have their Pell Grant canceled

If the Pell Grant reduction is made in the fall quarter, the spring quarter's award will be reduced. If the Pell Grant reduction is made due to a deficiency in the winter or spring quarter, the student will be billed for the amount of the reduction.

2. Cal Grant A and Cal Grant B Fee Payments
Students must be enrolled in a minimum of six units during the quarter in order to remain eligible for the full amount of their Cal Grant Fee Payment Authorization. Students enrolled in less than six units should contact the California Student Aid Commission for a leave of absence from the Cal Grant program; request forms are available at the Financial Aid Office. Graduating seniors with less than six units left to graduate should contact the Financial Aid Office for a possible exception to the unit requirement.
3. Cal Grant B—subsistence
In order to receive full Cal Grant B subsistence students must be enrolled in a minimum of six units each quarter. Subsistence checks are issued at the beginning of each quarter. Units may not be averaged from one quarter to the next.

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.
- 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 (i.e., prolonged hospitalization, death in the family)

Appeals Procedure

Students wishing to appeal must submit the UCI Financial Aid Appeals Request Form and a letter to the Financial Aid Office, stating their reasons for failing to meet the unit, clock-hour, or GPA progress requirements, and whether or not they have solved their difficulties. 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, Medical Student 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). 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 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 Graduate Studies, who will make the final recommendations to the Director of Financial Aid 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 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 Director of Financial Aid for implementation.

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 five top honors awards: Regents', University, Chancellor's Club, Alumni Association, or UCI Foundation Scholarships. The scholarships have stipends which range from \$250 to \$1,500, or, in the case of Regents' Scholarships, provide full demonstrated need.

Entering Freshman and Transfer Students

Students who are entering UCI in the fall must complete the scholarship section of the UC Application Packet and the application must be submitted by November 30. The Financial Aid Office automatically collects information about applicants' scholarship qualifications. Applications that meet the requirements are reviewed by the Faculty Committee on Undergraduate Scholarships, Honors, and Financial Aid and an Alumni Association Committee.

Continuing UCI Students

Academic records of all current UCI students also are reviewed. Continuing students who meet the qualification requirements are invited to apply. Applications are reviewed by the Faculty Committee on Undergraduate Scholarships, Honors, and Financial Aid and an Alumni Association Committee.

Restrictive Endowment Scholarships

All UCI students may apply for Restrictive Endowment Scholarships. Entering students should complete the scholarship section of the UC Application Packet. Continuing UCI students should complete the application form available in the Financial Aid Office. Eligibility requirements for these scholarships vary greatly and are restricted in terms of such student characteristics as geographic location, family background, and physical disabilities. For the most part, these scholarship awards are based on the student's established financial need.

Regents' Scholarships

Regents' scholarships, among the highest honors conferred upon UC students, are awarded on the basis of academic excellence and exceptional promise, without reference to financial need. Undergraduate students are eligible upon graduation from high school or upon completion of the sophomore year of college. Medical students are eligible during any year of their study in medical school. The appointments range from four years for students entering from high school and first-year medical students, to two years for undergraduate students appointed after their sophomore year. Regents' Scholars receive a \$500 honorarium for each year of their appointment. In addition, a stipend is awarded annually to Regents' Scholars who complete the financial aid application process and demonstrate financial need. The amount of the stipend is equivalent to their demonstrated need.

University Scholarships

University scholarships are offered to students entering their freshman or junior year who show evidence of high scholastic attainment. Students who demonstrate financial need may receive stipends ranging up to \$1,200 per academic year. These stipends

may be renewed by completing the application process and demonstrating financial need.

National Merit Scholarships

UCI is a sponsor of the National Merit Scholarship. Recipients are selected from a list of finalists who selected UCI as their first college choice on the National Merit Scholarship Application. Annual awards for attendance at UCI are \$500. In addition, UCI National Merit Scholars who have demonstrated financial need will be considered for scholarships up to \$2,000 per academic year.

Paul Douglas Teacher Scholarship

This federally funded program provides college scholarships to outstanding high school graduates and college students who demonstrate a commitment to pursue teaching careers at the preschool, elementary, or secondary level. Scholarships may be awarded for up to four academic years, beginning in the recipient's sophomore year, with maximum scholarships of \$5,000 per year.

Applicants must be in the top 10 percent of their graduating high school class or have received an equivalent General Educational Development (GED) score. Participants must attend a California postsecondary institution with teacher preparation programs approved by the California Commission on Teacher Credentialing and agree to teach two years full-time for each year the scholarship is received.

Applications are available after January 1 at participating postsecondary institutions with teacher preparation programs, California high schools, and the California Student Aid Commission.

Robert C. Byrd Honors Scholarship

This federally funded program provides college scholarships to high school graduates who have demonstrated outstanding academic achievement in high school and who show promise of continued academic achievement in college. These \$1,500 nonrenewable scholarships are awarded for the first year of study at any public or private nonprofit institution in the United States. Scholarships are awarded, in part, according to the Congressional District in which the applicant resides.

Applications are available after January 1 at all California public and private high schools.

Exceptional Financial Need Scholarship and Financial Assistance for Disadvantaged Health Professions Students

These federally funded programs are for students of exceptional financial need from a disadvantaged background accepted for enrollment at a health profession school. Applicants must be U.S. citizens or permanent residents. They must provide the Financial Aid Office complete financial aid information including information on parents' income and assets (regardless of their dependency status). All College of Medicine applicants for campus-based financial aid are automatically considered for these scholarships. For additional information on these programs, contact the College of Medical Financial Aid Office, 125 Medical Surge I; telephone (714) 856-6476.

For information on ROTC scholarships, see Supplementary Educational Programs.

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.

Pell Grant is the largest federally funded grant program and provided up to a maximum of \$2,300 for the 1990-91 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 SAAC or the Application for Federal Student Aid to apply for this grant.

Cal Grant A is a State-funded scholarship program which currently provides awards to be applied to the payment of University fees. In 1990-91 Cal Grant A awards were as much as full fees (\$1,874) for the academic year. To be eligible, applicants must be California residents and demonstrate financial need. Students must use the SAAC 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 \$1,410 during the student's first year and \$1,410 plus 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 SAAC 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. If offered both, the Financial Aid Office recommends taking Cal Grant B over Cal Grant A.*

Supplemental Educational Opportunity Grant (SEOG) 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.

UC Grant-In-Aid (GIA) 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.

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; interest rates vary from 5 to 12 percent per year. 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 Financial Aid Office or lender.

A student's loan responsibilities, prior to acceptance of the loan, are to understand the terms of the loan and participate in an entrance interview. After accepting the loan, the recipient must repay the loan in accordance with the repayment schedule, advise the Financial Services Office 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 canceled upon presentation of official confirming documents.

Perkins Loan (formerly National Direct Student Loan) provides long-term federal loans for U.S. citizens and eligible noncitizens. The amounts awarded vary, depending on financial need, but cannot exceed \$4,500 for the first two years or \$9,000 for the undergraduate years. Graduate students may receive an aggregate of \$18,000 which includes loans received as undergraduates. 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.

* For loans made prior to July 1, 1987, interest charges and repayment begin six months after the borrower ceases to be enrolled or is enrolled less than half-time.

University Loan, funded by 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.

Stafford Loan (formerly Guaranteed Student Loan), processed through participating banks and other lending institutions, is available to undergraduate, graduate, and medical students who are U.S. citizens or eligible noncitizens, and who demonstrate financial need. In addition to filing a SAAC to determine financial need, students need to file a separate State Stafford Loan application. They will be notified of their eligibility for a loan on their Award Letter and the Financial Aid Office will mail them a Stafford Loan application. Freshmen and sophomores may be awarded up to \$2,625 each academic year; juniors and seniors may be awarded up to \$4,000 each academic year; graduate and medical students may be awarded up to \$7,500 each academic year. Students must advance a grade level during the academic year or be subject to an 11-month waiting period before becoming eligible to apply for another Stafford Loan. The lending institution will deduct both a guarantee and origination fee from the amount of the loan prior to issuing the check.

Interest rates:

1991-92 borrowers	8 percent*
Repeat borrowers—	
Loans after September 1983	8 percent
Loans from January 1980–September 1983	9 percent
Loans before January 1980	7 percent

* First-time loans made after July 1, 1988, have an 8 percent rate for the first four years of repayment. Beginning with the fifth year, interest is 10 percent on the remaining balance.

Cumulative maximums:

Undergraduate	\$17,250
Graduate and Medical students	\$54,750
(includes undergraduate loans)	

Deferment period before repayment: Six months after ceasing to be enrolled at least half-time

Full repayment: Up to 10 years

Minimum payment: \$50 per month

The Financial Aid Office has a list of participating banks, savings and loan associations, and credit unions and their requirements and/or restrictions.

Parental Loans for Undergraduate Students (PLUS) are designed to assist parents of dependent undergraduate students who are unable to demonstrate financial need for campus-based funds. Parents may be eligible to borrow up to \$4,000 each academic year on behalf of a student. The loan amount may not exceed the net cost of a student's education for the academic year.

Interest rate: Based on a 52-week Treasury Bill plus 3.25 percent, not to exceed 12 percent

Cumulative Maximum: \$20,000 not to include the amount the student has borrowed under the Stafford Loan or SLS program

Deferment period before repayment: 60 days from day of check disbursement

Minimum payment: \$67 on a five-year repayment

Full repayment: Up to 10 years

Supplemental Loan to Students (SLS) assists independent students who are unable to demonstrate financial need for campus-based funds. Students may be eligible to borrow up to \$4,000 each academic year. Undergraduate, graduate, or medical students who continue to remain enrolled full time immediately enter the student deferment status. The repayment period begins immediately, however, if a student drops below full-time status, withdraws, or graduates. SLS borrowers are responsible for payment of all interest that accrues during any student deferment and repayment periods.

Interest rate: Based on a 52-week Treasury Bill plus 3.25 percent, not to exceed 12 percent

Cumulative Maximum: \$20,000 not to include the amount the student's parent has borrowed under the PLUS program

Deferment period before repayment: Immediately after the student ceases to be enrolled full-time, withdraws, or graduates

Minimum payment: Based on the repayment option the student chooses, approximately \$67 on a five-year repayment

Full repayment: Up to 10 years

Health Education Assistance Loan (HEAL) provides educational loans to medical students. Applicants must be U.S. citizens or permanent residents who are enrolled in or have been accepted for enrollment to the College of Medicine. Applicants must be full-time students in good academic standing. A student may qualify to borrow up to \$20,000 per year. The cumulative maximum is \$80,000. The interest rate is tied to 91-day Treasury bills plus 3 percent and begins at the time the student signs the promissory note. Repayment of the principal plus interest begins 10 months after a student is no longer enrolled fulltime and must be completed within 25 years. Applications are available at the College of Medicine Financial Aid Office.

Health Professional Student Loan (HPSL) provides long-term federal loans to medical students. Applicants must be U.S. citizens or permanent residents. The amount of the loan may not exceed the cost of fees plus \$2,500 per academic year or the amount of the student's actual financial need, whichever is less. The interest rate is five percent. Loan repayment begins after a student has completed professional training, including internships and residencies, and must be completed within 10 years.

Emergency loans are made from an emergency student loan fund made possible through various philanthropic individuals and organizations. Undergraduate and graduate students who have experienced unanticipated financial problems of a temporary nature may borrow up to \$100 without interest or service charge. Medical students may borrow up to \$300. During fall quarter only, students may have an emergency loan processed for the amount of their fees. 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 Financial Aid Office or at the College of Medicine Financial Aid Office. This loan is not based on demonstrated financial need.

Work-Study

The 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 work-study program, students can reduce the amount of the loan to be repaid after leaving school. Both undergraduate and graduate students are eligible for work-study awards. Medical students must obtain the approval of the Associate Dean for Medical Student and Curricular 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 a 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. Information about the terms and conditions of work-study employment will be provided in the UCI Financial Aid Award Guide sent to all UCI students receiving financial aid.

Veterans Work-Study Program is available only to U.S. military veterans and their eligible dependents. Separate applications and detailed information are available from the UCI Veterans Student Services Office, 209 Administration Building; telephone (714) 856-6477.

Additional Aid for Graduate and Medical Students

Most graduate fellowship programs are administered by the Office of Research and Graduate Studies. Graduate students should contact the Office, 145 Administration Building; telephone (714) 856-6761, for information about application procedures for other forms of aid such as graduate fellowships or teaching and research assistantships.

Medical students should contact the College of Medicine Financial Aid Office, 125 Medical Surge I; telephone (714) 856-6476, for information about other sources of financial assistance.

Aid for International Students

Students who are not U.S. citizens or permanent residents of the United States, and have experienced an unanticipated change in their financial situation, may be eligible for assistance from a very limited number of University programs. The financial change must be fully documented. In order to be considered for financial aid, students must have completed at least three years of study at UCI as undergraduates or four years of study as graduate students. Financial aid is limited to the expenses for books and fees; tuition will not be considered. International students may contact the Financial Aid Office or the Office of International Services for further information.

Aid for Disabled Students

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

Student Employment

The Career Planning and Placement Center assists UCI students and their spouses 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 Career Planning and Placement Center. The Center is located in Student Services I.

Undergraduate Admissions

The Office of Admissions is responsible for the admission of new undergraduate freshman and transfer students. Inquiries may be addressed to the Office of Admissions, 245 Administration Building, University of California, Irvine, CA 92717. General admission information is available by telephoning (714) 856-6703.

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

- Categories of Application
- Admission as a Freshman Applicant
- Admission to the University Program for High School Scholars
- Admission as a Transfer Applicant
- Nonresident Admission Requirements
- Admission of International Students
- Advanced Placement Credit
- Application Procedures

Categories of Application

An **undergraduate** applicant is a student who wishes to complete a program of studies 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.

A **transfer** applicant is a student who has completed high school and who has been a registered student in a regular or extension session of a college or university other than a summer session immediately following high school graduation.

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 on the Irvine campus 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.

A **University Program for High School Scholars (UPHSS)** applicant is an accelerated high school student who wishes to pursue a particular subject beyond the level offered by the high school or perhaps an area of interest not offered by the high school in which the student meets the necessary prerequisites. Participants are officially registered UCI students who enroll in the same courses and are evaluated on the same basis as full-time undergraduates. UPHSS students enroll in one or two UCI courses on a reduced-fee basis concurrently with their high school courses.

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 entrance 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 Basic Eligibility Requirements section, are designed to ensure that all eligible students are adequately prepared for University work.

Since at UCI, as at most University of California campuses, the number of eligible applicants well exceeds the number of spaces available, the campus uses selection criteria which are more demanding than minimum UC eligibility requirements. Academic qualifications are foremost, with 60 percent of successful applicants admitted solely on indices derived from correlations between high school grade point average, all admission test scores, high school academic courses, and the performance of previous UCI freshmen. To attain a student body that meets the University's high academic standards and reflects the cultural, geographic, economic, and social diversity of California, the remaining 40 percent of successful applicants are admitted on criteria which supplement the student's scholarly qualifications and which demonstrate academic backgrounds and motivation not reflected by the indices alone. These selection procedures are described in the Selection Criteria section.

At present undergraduate majors in Civil Engineering, Economics, Electrical Engineering, Mechanical Engineering, and Psychology employ more stringent criteria than those for the campus in general.

Selection Criteria

Academic Criteria. Applicants are selected using indices based on each standard measure of academic aptitude and achievement required for admission to the University. These factors are listed below in descending order of emphasis. The weight of each factor is based on its correlation with the cumulative grade point average earned by recently admitted students during their first two years at UCI.

1. Scores on the three required College Board Achievement Tests;
2. High school grade point average in academic courses, weighted for honors;
3. SAT Verbal and Mathematical scores;
4. The number of high school academic courses.

Economics. Applicants selected include those who rank within the highest range of the academic criteria. Those not selected may choose to be Undeclared in the School of Social Sciences or opt for any available major for which they qualify. However, lower-division prerequisite courses are open to all students, and students may compete for the major in Economics as a continuing junior based on performance in those courses.

Engineering. Students must apply to a preferred major — Civil, Electrical, or Mechanical — and to an alternative. Though selectivity varies by major, admission is offered to over 60 percent of applicants who rank highest using the academic criteria with additional emphasis on mathematics and science preparation. Others are chosen for exceptional promise indicated by test scores, relevant academic or extra curricular achievements, unusu-

ally rigorous academic preparation, and advanced mathematics and science course work.

Psychology. A limited number of freshmen most highly qualified on academic criteria alone may matriculate directly as majors in Psychology. Those not selected may choose to be Undeclared in Social Sciences or opt for any available major for which they qualify. However, lower-division prerequisite courses are open to all students, and students may compete for the major in Psychology as a continuing junior based on performance in those courses.

Supplemental criteria. Complete application materials for all applicants are carefully scrutinized by the Office of Admissions staff, with faculty sanction. Such review is carefully documented, but does not rely on formulas or weightings. Applicants are selected based on a review of factors that evidence a demanding academic orientation, such as exceptionally challenging courses; outstanding accomplishments related to the student's academic aims; superior motivation, diligence, and creativity; a strong match between UCI's programs and the student's academic and career objectives, preparation, and talents; and potential contribution to the campus.

UCI also is sensitive to hardships beyond the student's control which may have damaged their academic record, such as social, economic, or geographic origins which have restricted the development of potential; constraints on feasible educational alternatives; and health and physical disabilities.

Basic Eligibility Requirements

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.

Freshmen applicants who have not yet decided on a major should refer to the section on Planning an Undergraduate Program.

Applicants who do not meet the requirements for admission at the time of high school graduation may be considered after they meet the requirements for admission in advanced standing (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 or community college which conducted the course.

Requirements

To be eligible for admission to the University as a freshman, an applicant must meet the Subject, Scholarship, and Examination requirements. It is also possible to qualify for admission by examination alone, as explained in the section Admission by Examination Alone.

1. UC Subject Requirement

The UC subject requirement consists of several courses from six core subjects. These required courses are called the "a through f" subjects. Students are required to complete 15 "a through f" subjects as described below. (A one-year course is equal to one unit; a one-semester course is equal to one-half unit.) Also, at least seven of the 15 units must have been earned in courses taken during the last two years of high school. To meet the subject requirement, these courses must appear on a certified course list which is available in the high schools for California applicants. The Office of Admissions will review and accept courses

that meet the requirements for applicants graduating from out-of-State schools.

"A through F" course requirements

a. History: 1 year. One year of United States history *or* one-half year of United States history and one-half year of civics or American government

b. English: 4 years. Four years of college-preparatory English composition and literature

(All English courses must require frequent and regular writing and reading of classic and modern literature, poetry, and drama. Only two semesters of a certified English-as-a-second-language [ESL] course will be accepted. Also, not more than two semesters of ninth grade English will be accepted for this requirement.)

c. Mathematics: 3 years. Three years of mathematics elementary algebra, geometry, and advanced (second-year) algebra

(Mathematics courses taken in grades 7 and 8 may be used to meet part of this requirement if they are accepted by the high school as equivalent to its own courses.)

d. Laboratory Science: 1 year. A one-year course in one laboratory science, such as biology, chemistry, or physics, taken in the tenth grade or later

e. Language Other Than English: 2 years. Two years of a single language other than English in which there is substantial literature. Courses should emphasize speaking and understanding, and include instruction in grammar, vocabulary, reading, and composition.

(Language other than English courses taken in grades 7 and 8 may be used to meet this requirement if they are accepted by the high school as equivalent to its own courses. Students are strongly encouraged to complete three years of one language in preparation for the UCI language other than English breadth requirement which will become effective for freshmen entering college in fall 1992.)

f. College-Preparatory Electives: 4 years. These units are to be chosen from at least two of the following subject areas: history, English, advanced mathematics, laboratory science, language other than English, social science, and visual and performing arts. Students are urged to consult their high school counselor in the selection of course work to fulfill this requirement.

The general objective of the elective program is to improve the student's analytical ability, promote their artistic development, and strengthen their oral and writing skills. Electives should involve considerable reading and writing in an amount appropriate to the course and the subject matter. The emphasis in elective courses should be to prepare for future college-level work.

Courses satisfying the "f" 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.

English: All English courses should require substantial reading with frequent and extensive practice in writing which is carefully evaluated and criticized. A course in journalism, speech, debate, or drama is acceptable if it meets the rigor in reading and writing stated above.

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

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 Pascal, 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: A laboratory science course should be a course in the biological or physical sciences in which students make their own observations and measurements and analyze these data to obtain further information. On average the laboratory activities should involve an amount of time equivalent to at least one full class period per week.

A science course in the ninth grade 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 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 prerequisite. In order for a second language to qualify as an elective, at least two years of this language must be completed.

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.

Visual and Performing Arts: Courses in this area consist of instruction in dance, drama/theatre, music, and the visual arts. Courses should give specific attention to as many of the fundamental arts components as possible, including the perceptual, the creative, the historical, or the critical as are applicable.

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 developing creative artistic ability and those devoted to artistic performance should have prerequisites (either 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, 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.

Changes in the History/Social Science, Laboratory Science, and College Preparatory Electives subject requirements will become effective for students applying to the University for fall 1994. Subject requirements for English, Mathematics, and Languages Other Than English will remain the same as currently outlined.

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

b. Laboratory Science: 2 years. Two years of laboratory science providing fundamental knowledge in at least two of these three areas: biology, chemistry, and physics. Not more than one year of grade 9 laboratory sciences can be used to meet this requirement.

f. College Preparatory Electives: 2 years. Two units (four semesters), in addition to those required in the "a through f" areas chosen from the following subject areas: visual and performing arts, history, social science, English, advanced mathematics, laboratory science, and languages other than English (a third year in the language used for the "e" requirement or two years of another language).

2. Scholarship Requirement

Applicants who attain a minimum grade point average of 3.30 (where the letter grade A = 4, B = 3, and C = 2) in "a through f" subjects taken after the ninth grade will be considered eligible for admission to the University regardless of their scores on the standardized tests used for the examination requirement. Applicants whose grade point average is below 3.30 but greater than 2.77 are eligible to be considered for admission if they achieve the composite or total test score specified on the Eligibility Index. The grade point average will be based on semester grades, unless a high school gives only year grades. (Grades earned in ninth grade or earlier are not used to calculate the grade point average for admission; however, these courses will be used to meet the subject requirement if they are completed with grades of C or better.) Freshman applicants may be required to present academic qualifications beyond those described here.

Applicants should have earned grades of C or better in meeting the subject requirement. Any "a through f" course in which a student received a D or F grade must be repeated with a higher grade or, in sequential areas of mathematics, chemistry, and language other than English, *only* validated by completion of advanced course work. (Applicants should consult with their counselors as to how these grades can be remedied and how the University will use them in the evaluation of the high school record.)

Honors-Level Courses. Advanced Placement courses, higher-level courses offered through the International Baccalaureate Program, courses certified by the University as honors courses, and college courses in the "a through f" college preparatory subjects that are transferable are examples of honors-level courses. The University assigns extra grade points for up to four units of honors-level courses taken in the last three years of high school. NOTE: No more than two units of honors-level courses taken in grade 10 may be assigned extra points. Grades in honors courses will be counted as follows: A = 5 points, B = 4 points, and C = 3 points. Grades of D are not assigned extra points. To be counted, these grades must have been earned in University-approved honors-level courses in history, English, advanced mathematics, laboratory science, language other than English, computer science, social science, and the visual and performing arts.

3. Test Requirements

All freshman applicants must submit test 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 Scholastic Aptitude Test or the American College Test in October or November and will take the Achievement Tests in November or December.)* Scores from earlier dates will be accepted. Applicants must ensure that reports for all scores have been submitted directly to the UCI Office of Admissions. The following tests are required:

1. One Aptitude Test, either:

- a. The Scholastic Aptitude Test (SAT) (the verbal and mathematics scores submitted from this test must be from the same sitting); or

- b. The American College Test (ACT) composite score and

2. Three College Board Achievement Tests, which must include (a) English composition, (b) mathematics, level 1 or 2, and (c) one from among English literature, language other than English, sciences, or social studies. The Achievement Test in Literature may not be substituted for the English composition test.

3. **Admission by Examination Alone** A student can qualify as a freshman by examination alone. The required total score on the SAT is 1,100. (If the ACT is presented, the minimum score is 26 if the test was taken prior to October 1989 or 27 if it was taken October 1989 or later.) Also, the student's total score on the three College Board Achievement Tests must be 1,650 or higher, or at least 1,730 if a nonresident of California, with no score less than 500 on any individual Achievement Test. This option does not apply to students who will have completed more than 12 transferable units prior to admission. The College Board Achievement Tests cannot be taken in academic subjects covered by transferable college courses a student may have taken.

As the *Catalogue* goes to press, the test scores for admission by examination alone and the eligibility index are under review and are subject to change.

Eligibility Index

A-F GPA	ACT* or Composite	SAT** Total	A-F GPA	ACT* or Composite	SAT** Total
2.78	35/36	1600	3.05	22/23	970
2.79	35/36	1580	3.06	21/22	950
2.80	34/35	1550	3.07	21/22	920
2.81	34/35	1530	3.08	20/21	900
2.82	33/34	1510	3.09	19/21	880
2.83	33/34	1480	3.10	18/20	850
2.84	33/34	1460	3.11	18/20	830
2.85	32/33	1440	3.12	17/19	810
2.86	32/33	1410	3.13	16/19	780
2.87	32/33	1390	3.14	15/18	760
2.88	31/32	1370	3.15	14/17	740
2.89	31/32	1340	3.16	14/17	710
2.90	30/31	1320	3.17	13/17	690
2.91	30/31	1300	3.18	12/16	670
2.92	29/30	1270	3.19	11/15	640
2.93	29/30	1250	3.20	10/14	620
2.94	28/29	1230	3.21	9/14	600
2.95	28/29	1200	3.22	9/14	570
2.96	27/28	1180	3.23	8/13	550
2.97	27/28	1160	3.24	8/13	530
2.98	26/27	1130	3.25	7/12	500
2.99	26/27	1110	3.26	7/12	480
3.00	25/26	1090	3.27	6/11	460
3.01	25/26	1060	3.28	6/11	430
3.02	24/25	1040	3.29	5/11	410
3.03	24/25	1020	3.30	5/11	400
3.04	23/24	990			

* ACT is scored in intervals of 1 point from a minimum of 1 to a maximum of 35 or 36. Use the first score listed if the test was taken prior to October 1989. Use the second score if the test was taken October 1989 or later.

** SAT is scored in intervals of 10 points from a minimum of 400 to a maximum of 1,600.

Admission to the University Program for High School Scholars (UPHSS)

The opportunity to enroll in University classes concurrent, usually, with the senior year of high school is available to certain accelerated students (see UPHSS in the Index). Admission to UPHSS is based upon a combination of criteria including grades, specific preparation in the field of interest, standardized test scores, recommendations, and statement of purpose.

Through UPHSS, qualified high school students may enroll in UCI courses, receive grades based on the same standards as full-time students, and receive full University of California credit for their work.

To continue at UCI after high school graduation, a UPHSS student need only complete a change-of-major petition and enroll as a full-time student. Graduation requirements (UC, UCI, school, and major) for UPHSS students will be determined by the year of first enrollment as a regular full-time status student. If the UPHSS participant wishes to attend another University of California campus, the student must follow the regular admissions process and must complete an Undergraduate Application form. The form should be stamped by the UPHSS coordinator. High school students wishing more information about the program should contact the Office of Admissions or their high school counselor.

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. 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.)

Selection Criteria

UCI attempts to accommodate as many qualified students from other universities and colleges as possible, particularly as juniors and seniors. However, in circumstances where selectivity beyond UC eligibility is required, 60 percent of those admitted will be on the basis of transferable grade point average in a substantial amount of college work. Other priorities will be extended to junior-level California community college applicants and specifically recruited programs.

Applicants to Economics; Civil Engineering; Electrical Engineering; Engineering (General), which is open to upper-division students only; Information and Computer Science; Mechanical Engineering; and Psychology are subject to screening beyond minimum admission requirements. In general, applicants selected are those with the highest grades overall and in prerequisite courses.

Economics: Junior-level applicants with highest grades in the following courses received preference: one-year lower-division sequence in English composition, microeconomic and macroeconomic theory, and a semester or two quarter courses of calculus.

Engineering: All applicants must select either Civil Engineering; Electrical Engineering; Engineering (a general program of study which is open to upper-division students only); or Mechanical Engineering as their major on the application. They should also indicate a second choice major, either a different Engineering major or a major in another School. Applicants must complete prerequisites in mathematics, physics, chemistry, and computational methods, and satisfy UCI's lower-division writing requirement. In addition, it is to the student's advantage to complete as much of the UCI breadth requirement as possible prior to transferring to UCI (or to complete fully one of the options described in the section entitled Information for Transfer Students: Fulfilling Requirements for a Bachelor's Degree). Selection is by grade point average within each major.

Information and Computer Science: Applicants must have completed a year of discrete mathematics or calculus, a year of computer science including a programming course in a modern high-level language (such as ADA, PASCAL), and a one-year lower-division sequence in English composition.

Psychology: Applicants with the highest grades in the following courses will receive preference: introduction to psychology, two or more other lower-division psychology courses, a course in computer programming language, a transferable mathematics course (statistics or calculus preferred), and a one-year lower-division sequence in English composition. In preparation for study in Psychology, it is recommended that students also complete introductory social science courses chosen from anthropology, cognitive linguistics, economics, sociology, or political science.

Transfer Student Admission Requirements

The 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.

The transcript submitted from the last college attended must show, as a minimum, that the student was in good standing and had earned a grade point average¹ of 2.00 or better. If the grade point average fell below 2.00 at any one college attended, except the last one attended, the student must have sufficient units and grades to offset the deficit.

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

1. A student who met the Eligibility Index and completed all the "a through f" courses in high school may be admitted any time after establishing an overall grade point average of 2.00 or better. If a student has completed less than 12 quarter or semester units of transferable college credit since high school graduation, the student must also satisfy the examination requirement for freshmen.
2. A student who met the Eligibility Index but had not studied one or more of the required courses in high school may be admitted after the student has:
 - a. established an overall grade point average of 2.00 or better in another college or university; and
 - b. completed, with a grade of C or better, appropriate college courses in the high school subjects lacked; and
 - c. completed 12 or more quarter or semester transferable units, or met the examination requirement for freshmen.
3. A student who was not eligible for admission as a freshman because the Eligibility Index was not met or who both failed to meet the Eligibility Index and lacked required subjects may be admitted after the student has:
 - a. established an overall grade point average of 2.40 or better in another college or university; and
 - b. completed 84 quarter units (56 semester units) of college credit in courses accepted by the University for transfer; and
 - c. completed *one* of the following two options:
 - i. With a grade of C or better, (1) one transferable course in English composition; (2) one transferable course selected from U.S. history, a laboratory science, or a language other than English; (3) courses equivalent to high school elementary algebra, advanced algebra, and geometry; *or* a course in mathematics, such as trigonometry, or a more advanced course in mathematics or statistics for which advanced algebra is a prerequisite. The mathematics courses do not have to be transferable.
 - ii. Appropriate college courses, with grades of C or better in the "a through f" subjects that the student lacked. Up to two units of high school work in "a through f" subjects will be waived, but transfer applicants must have satisfied the freshman admission requirements of four years of college-preparatory English and three years of mathematics (part of the "a through f" requirements).

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

¹ The grade point average is determined by dividing the total number of acceptable units transferred into the number of grade points earned on those units. A student may repeat courses completed with a grade lower than C up to a maximum of 16 quarter units without penalty.

The scholarship standard is expressed by a system of grade points and grade point averages earned in courses accepted by the University for advanced standing credit. Grade points are assigned as follows: for each unit of A, 4 points; B, 3 points; C, 2 points; D, 1 point; I and F, no points; P/NP, no points but are included in the unit total.

Zero in on Transferring!

Community college students who plan to transfer to UCI can have their admission assured as early as one year prior to the time they enroll through a program entitled Zero in On Transferring! or "ZOT!" (nicknamed after the victory yell of UCI's mascot, the Anteater). This program assists students at selected Southern California community colleges to become eligible for admission and to complete most of the lower-division graduation requirements before they actually transfer.

To participate in "ZOT!" students must be California residents, must have completed 24 semester units of transferrable course work with a minimum overall grade point average of 2.4, and must be ready to transfer to UCI within 18 months. Participants receive personalized guidance in determining their admission status and in identifying specific courses to complete at their current college, along with UCI's written admission agreement. "ZOT!" is available to all majors except Civil Engineering, Economics, Electrical Engineering, Engineering, Information and Computer Science, Mechanical Engineering, and Psychology.

Additional information is available from the Transfer Student Services Office, telephone (714) 856-7821, or from the counseling office or transfer center at participating community colleges.

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 an Application for Undergraduate Admission *and* a Supplementary Information for Second Baccalaureate Applicants form, available from the Office of Admissions. Students who have attended UCI as undergraduates during a regular academic quarter should obtain and complete a Second Baccalaureate Application form through the Registrar's Office.

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.

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 through f" pattern of subject requirements listed under requirements for California residents (subject to change for students applying to the University for fall 1994); (3) earn a grade point average of at least 3.40 or higher in the required high school subjects (3.00 is equal to a B average); and (4) meet the examination requirement: one Aptitude Test either the Scholastic Aptitude Test (SAT) (verbal and mathematics scores must be from the same sitting) or the American College Test (ACT) composite score and three College Board Achievement Tests which must include (a) English composition, (b) mathematics, level 1 or 2, and (c) one from among English literature, language other than

English, sciences, or social studies. (The Achievement Test in Literature may not be substituted for the English composition test.)

Please note that the Freshman Eligibility Index applies to California residents only. To be considered for admission by examination alone, a nonresident applicant must score either 1,100 on the Scholastic Aptitude Test or 26 on the American College Test if the test was taken prior to October 1989 and 27 if it was taken October 1989 or later. The total score on the three College Board Achievement Tests must be 1,730 or higher with a score of at least 500 on each test.

As the *Catalogue* goes to press, the test scores for admission by examination alone and the eligibility index are under review and are subject to change.

Nonresident Transfer Applicant

A student who met the admission requirements for freshman admission as a nonresident must have a grade point average of 2.80 or higher in college courses that are accepted by the University for transfer credit.

A nonresident applicant who graduated from high school with less than a 3.40 grade point average in the subjects required for freshman admission must have completed at least 84 quarter units (56 semester units) of transferable work with a grade point average of 2.80 or higher. Upon successful completion of that work, two units of the required high school subjects may be waived but transfer applicants must have satisfied the freshman entrance requirements of four years of college-preparatory English and three years of mathematics (part of the "a through f" requirements). A student who lacked any of the required subjects in high school must complete, with a grade of C or better, appropriate college courses in those subjects, or, with a grade of C or better, (1) one transferable course in English composition; (2) one transferable course selected from U.S. history, a laboratory science, or a foreign language; (3) courses equivalent to high school elementary algebra, advanced algebra, and geometry; or a course in mathematics, such as trigonometry or statistics, for which advanced algebra is a prerequisite. The mathematics courses do not have to be transferable.

Nonresident Tuition Fee

Refer to the Expenses and Fees section for information regarding residence classification for tuition purposes and the Nonresident Tuition Fee.

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. However, it is possible that international applicants to oversubscribed programs may not be offered admission to either their first-choice campus or to another University of California campus. The application should be submitted to the University of California Undergraduate Application Processing Service early in the appropriate application filing period. Official certificates and detailed transcripts of records should be submitted directly to the UCI Office of Admissions. 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.

International applicants whose native language is other than English will be required to demonstrate their English proficiency. This is most often accomplished by achieving a minimum score of 550 on the Test of English as a Foreign Language (TOEFL). The admission of otherwise eligible applicants who do not meet this requirement will be deferred until it is possible for them to demonstrate an adequate level of English ability. Arrangements to take the TOEFL may be made by writing directly to TOEFL, Educational Testing Service, P.O. Box 899, Princeton, New Jersey 08540. Students must request the Educational Testing Service to forward results of their tests to the Office of Admissions. Completion of an *acceptable* English composition course (as determined by the Office of Admissions) with a grade of C or better will also clear the English proficiency requirement for international applicants.

Prospective students who wish to improve their English proficiency to meet the TOEFL requirement may enroll in the intensive Program in English as a Second Language sponsored by University Extension. Requests for information should be addressed to Program in English as a Second Language, University of California Extension, P.O. Box AZ, Irvine, CA 92716. See Supplementary Educational Programs for additional information.

In addition to achieving a minimum TOEFL score of 550, all international students must take an 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 English as a Second Language courses during the freshman 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 the nonresident tuition in addition to fees paid by legal residents of California. Students must also pay the International Student Health Insurance Fee, or have private insurance. See the Student Health Service section for additional information.

Please direct all inquiries regarding the undergraduate admission of international students to the Office of Admissions.

English Language Proficiency of Permanent Resident, Refugee, and International (F-1 Visa) Students: English as a Second Language

Any student (a) whose first or native language is not English, (b) who has not satisfied the Universitywide Subject A requirement, and (c) whose score on the verbal portion of the Scholastic Aptitude Test (SAT) is 350 or less, or any such student without a verbal SAT score, must, regardless of the student's TOEFL (Test of English as a Foreign Language) score, take an English as a Second Language Placement Test (ESLPT) prior to the first quarter of enrollment. Also, any student who is identified as an ESL student through the Universitywide Subject A Examination must take the ESLPT. The ESLPT 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 concerning when and where the test will be given and the test itself can be obtained from the Program of Academic Support Services Office (telephone 714-856-6206) and the Office of English as a Second Language (telephone 714-856-6781).

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



Cultural diversity is celebrated during UCI's annual Rainbow Festival, one of the many programs administered by the Cross-Cultural Center aimed at bridging cultural understanding on campus.

begin satisfying their ESL requirements within their first or second quarter at UCI. They must take these courses in consecutive quarters. The ESL requirements are to be completed within the first six quarters at UCI. Students who have not satisfied the ESL requirement by the end of their sixth quarter will be ineligible to enroll for a seventh quarter at UCI. Subject A must be satisfied during the quarter following the completion of ESL requirements.

If the ESL requirements are completed during the first quarter of enrollment, the Subject A requirement must be satisfied before the beginning of the fourth quarter of enrollment.

ESL courses, offered by the School of Humanities, include classes in writing, speaking and listening, and reading and vocabulary development. Refer to ESL in the Index to locate course descriptions.

Credit for English-as-a-Second-Language Course Work

Students whose first language is not English may receive up to 12 baccalaureate credits for English-as-a-second-language 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 on the college level in the country of the vernacular, or on the upper-division or graduate level at UCI or another accredited English-speaking institution.

College Board Advanced Placement

Advanced Placement Examination	AP Score	Unit Credit	Credit Allowed Toward Degree
COMPUTER SCIENCE ¹			
A Exam	3	2	ICS 21.
	4 or 5	2	Engineering E10, ECE11A, or ICS 21.
AB Exam	3	4	ICS 21. ³
	4	4	Engineering E10, ECE11A, or ICS 21. ³
	5	4	ICS 21, 22, and 23 and satisfies category V of the UCI breadth requirement; or Engineering E10 or ECE11A.
ECONOMICS			
Microeconomics	3	4	Elective credit only.
	4 or 5	4	Economics 20A-B.
Macroeconomics	3	4	Elective credit only.
	4 or 5	4	Economics 20C.
FINE ARTS			
Art History	3, 4, or 5	8	Art History 40A-B-C. Satisfies category IV of the UCI breadth requirement.
Studio Art ²			
General Portfolio	3, 4, or 5	8	Elective credit only.
Drawing	3, 4, or 5	8	Elective credit only.
Music ²			
Music Listening and Literature	3, 4, or 5	8	Elective credit only.
Music Theory	3, 4, or 5	8	Elective credit only.
GOVERNMENT AND POLITICS			
American Government	3, 4, or 5	4	Elective credit only.
Comparative Government	3, 4, or 5	4	Elective credit only.
HUMANITIES			
English ² (fulfills Subject A requirement)	3 (on either or both exams)	8	Elective credit only.
English Language and Composition	4 or 5	8	1 course toward category IV of the UCI breadth requirement from the English 28A-B-C sequence plus 4 units of elective credit.
English Composition and Literature	(on either exam)		
	4 or 5 (on both exams)	8	2 courses toward category IV of the UCI breadth requirement from the English 28A-B-C sequence.
Foreign Language (except Latin)	3 (on any exam)	8	First-year foreign language.
	4 or 5 (on any exam)	8	Second-year foreign language. Satisfies category V of the UCI breadth requirement.
Latin	3 (on one exam)	4	Elective credit only.
Virgil	3 (on both exams)	8	Latin 1A-B-C.
Catullus—Horace	4 or 5 (on one exam)	4	Latin 25.
	4 or 5 (on both exams)	8	Latin 25, 101, 102. Satisfies category V of the UCI breadth requirement.
History			
American	3, 4, or 5 (on one exam)	8	Elective credit only.
European	3, 4, or 5 (on both exams)	16	Elective credit only.

Advanced Placement Examination	AP Score	Unit Credit	Credit Allowed Toward Degree
MATHEMATICS AND SCIENCE			
Biology			
Non-Biological Sciences Majors	3, 4, or 5	8	Biological Sciences 1A-B-C. Satisfies category II of the UCI breadth requirement.
Biological Sciences Majors	3	8	Elective credit only.
Biological Sciences Majors	4 or 5	8	Biological Sciences 90 plus 5 units of elective credit.
Chemistry			
	3	8	Elective credit only. ³
	4 or 5	8	Chemistry 1A plus 4 units of elective credit. (Chemistry 1A/ILAE plus 3 units of elective credit for School of Engineering majors.) ³
Mathematics²			
AB Exam	3	4	Elective credit only. ³
	4 or 5	4	Mathematics 2A-B.
BC Exam	3	8	Elective credit only. ³
	4 or 5	8	Mathematics 2A-B.
Physics²			
Exam B	3, 4, or 5	8	Elective credit only.
Exam C, Part I or II	3 or 4	4	Elective credit only.
Exam C, Part I (Mechanics)	5	4	Physics 3A or 5A.
Exam C, Part II (Electricity and Magnetism)	5	4	Physics 3B.

¹ Maximum credit 4 units.

² Maximum credit 8 units.

³ Additional placement may be available following individual counseling.

Advanced Placement Credit

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

Students cannot earn units or grade points at UCI in courses from which they have been exempted on the basis of Advanced Placement credit. Students who elect to enroll in courses for which they have already received Advanced Placement credit will have those courses specially coded on their transcript without unit or grade credit. However, if a student receives less than full *series* credit (i.e., 8 units of credit for a 12-unit series such as Art History 40A-B-C or 4 units of credit for an 8-unit series such as Mathematics 2A-B), the student may elect to take the *final* course in the series for credit.

Application Procedures

Application packets for undergraduate admission to the University are available from the counseling office of any California high school or community college, or from any University of California Admissions Office.

Students applying for admission to UCI should complete the application and submit it according to the instructions provided in the *Undergraduate Application for Admission and Scholarships*. A nonrefundable application fee of \$40 must accompany the application. This basic fee entitles the applicant to be considered at one campus; for *each* additional campus selected, an additional \$40 fee is required. Applicants concerned with admission or application procedure questions *specific to UCI* should communi-

cate directly with the Office of Admissions, 245 Administration Building, University of California, Irvine, CA 92717.

When to Apply for Admission

To ensure that applications will be considered for admission by both UCI (or other University campuses) and the student's choice of major or program of study, the completed application and the application fee should be filed during the priority filing period. Each campus accepts for consideration all applications it receives during this period. Early filing is encouraged for students who plan to apply also for financial aid, University housing, or other special programs. 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 or ACT and three Achievement Tests) no later than the December testing date of the senior year of high school is strongly recommended for students applying for the fall quarter.

Quarter to be Admitted at UCI	Priority Application Filing Dates
Winter quarter, 1992	File July 1–30, 1991
Spring quarter, 1992	File October 1–30, 1991
Fall quarter, 1992	File November 1–30, 1991
Winter quarter, 1993	File July 1–30, 1992
Spring quarter, 1993	File October 1–30, 1992

After the priority filing period has ended, campuses will accept applications only if they still have openings for new students. This means that some campuses may still be able to accept additional applications and others may not.

Adding a Campus

If the campus or campuses being considered are still accepting applications, students may, after submitting their application, add additional campus choice(s) to that or those initially listed on their application. A \$40 fee for each additional campus will be required. Students should contact the Admissions Office on the campus to be added for information on which programs are still open and the procedures for adding campuses.

Students should be aware that processing an additional campus choice will take several weeks before the new campus actually receives the application and data. Students should also be aware that special program commitments, such as the Educational Opportunity Program or UCLA's Academic Advancement Program may vary from campus to campus. Students can communicate with the Housing or Financial Aid Office directly for information about deadlines, priorities, and availability of these services.

Transcripts

The Office of Admissions 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 or ACT tests and three Achievement Tests to the UCI Office of Admissions. *An official final high school transcript showing a statement of graduation also must be forwarded to the campus at which the student has decided to register and enroll.* Official final transcripts should arrive in the UCI Office of Admissions by July 15, 1991 for those students admitted for fall quarter, 1991. Those students entering in the winter or spring quarters must have their transcripts in the Office of Admissions within one month of the completion of the quarter in which they entered. A California Certificate of Proficiency, the results from a proficiency test from any state, or a General Education Development (GED) Certificate can be accepted in place of a high school diploma.

Transfer Applicants. UCI admissions counselors evaluate data from the Transfer Self-Reported Academic Record in the application; however, transfer students also are advised to send transcripts from each college attended. In particular, a transcript from the student's current college which includes grades from the fall term should be sent to the Office of Admissions. Students also are responsible for notifying the Office of Admissions about any changes in their listing of courses in progress. Attendance at any other school or college after an application to the University has been filed is considered to be part of the student's record and must be reported to the Office of Admissions.

Examination Arrangements

Students should make arrangements to take the required tests with the Educational Testing Service, College Board/ ATP, P.O. Box 23470, Oakland, California 94623-0470, or College Board/ATP, CN 6200, Princeton, New Jersey 08541-6200, for SAT and Achievement Tests. For the ACT, students should write to the American College Testing Program Registration Unit, P.O. Box 168, Iowa City, Iowa 52240. (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. 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 1991-92 SAT and Achievement Tests are offered concurrently on the following Saturday mornings:

October 12, 1991 (SAT only in California, Florida, Georgia, Hawaii, Illinois, North Carolina, South Carolina, and Texas)	
November 2, 1991	April 4, 1992 (SAT only)
December 7, 1991	May 2, 1992
January 25, 1992	June 6, 1992

The 1991-92 ACT Tests are offered on the following dates:

October 26, 1991	April 11, 1992
December 14, 1991	June 13, 1992
February 8, 1992	

Details on testing are available from the College Board, the American College Testing Program, and from most high school counseling offices.

Notification of Admission

Most fall quarter applicants are notified of their status between February 1 and March 15. Transfer applicants are usually notified by May 1. In many cases for transfer applicants, complete transcripts of course work are required before a final decision can be made. 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 15.

Statement of Intention to Register

Students who are accepted for admission will receive, with their notification of admission, a Statement of Intention to Register (SIR) form. The SIR serves to notify each campus of the student's decision to accept or not accept its offer of admission. Before completing and returning the form, students who have applied to more than one campus are advised to take as much time as is appropriate in considering their responses to each campus. However, it is essential that students allow enough time to meet the deadline for returning their SIR. Once they have decided on which campus to attend, students should submit their positive SIR and nonrefundable \$100 deposit (if applicable) to the campus Admissions Office. Students should not submit a positive SIR to more than one campus. Additionally, once the positive SIR and fee have been received, the student cannot transfer to another UC campus.

Freshman students entering in the fall quarter must return their positive SIR by May 1 or by the date indicated on the SIR.

Transfer students entering in a fall quarter must return their positive SIR by June 1, or, if admitted later, by the date indicated on the SIR.

Students entering in a winter or spring quarter must return the SIR within three weeks from the date of their notification of admission.

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 or University housing, and receipt of communications from the Financial Aid Office, the Housing Office, or any office other than the Admissions Office does not imply that eligibility for admission has been established.



UCI awarded 3,398 degrees in the 1989-90 academic year: 2,763 bachelor's, 408 master's, 134 Ph.D.'s, and 93 M.D.'s. More than 40,000 students have earned diplomas from UCI since the first graduating class of 14 students in 1966.

Planning an Undergraduate Program

Placement Testing

UCI's Placement Testing Office administers placement examinations 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 exams are developed by UCI faculty who also determine the grading criteria for each exam. 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 and high school work, also may be used to determine course placement.

Placement examinations are given in the areas of chemistry, physics, precalculus, college algebra, English as a second language, and reading.

1. Chemistry Placement Examination. Students who plan to enroll in Chemistry 10 or Chemistry 1A are required to take this examination. Students who have received a score of 4 or 5 on the College Board Advanced Placement Chemistry Examination are exempt from taking the Chemistry Placement Examination.
2. Physics Placement Examination. Students who plan to enroll in Physics 5A are required to take this examination. Students who have received a score of 4 or 5 on the Physics Advanced Placement Examination C, Part I are exempt from taking the Physics Placement Examination.
3. Precalculus Placement Examination. Students who plan to enroll in Mathematics 2A are required to take this examination. Students who have received either a score of 600 or higher on the College Board Advanced Mathematics Achievement Test (Level Two) or a score of 3, 4, or 5 on the Mathematics Advanced Placement AB or BC Examination are exempt from taking the Precalculus Placement Examination.
4. College Algebra Examination. Students who plan to enroll in Mathematics 1 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 examination.
5. English as a Second Language (ESL) Placement Examination. This examination is required of students (a) whose native language is not English, (b) whose Verbal Scholastic Aptitude Test (SAT) score is 350 or below, (c) who have not satisfied the Subject A requirement, and (d) who have received a letter from the ESL Program requiring them to take the ESL Placement Examination. Scores from the Test of English as a Foreign Language (TOEFL) are not considered. The ESL Placement Examination also is required of students referred to the ESL Program on the basis of their score on the Universitywide Subject A Examination. See the section on Admission of International Students for additional information.
6. Sequential Test of Educational Progress (STEP) Reading Examination. Students who have a Verbal SAT score of 400 or below are urged to take this examination which measures ability to read and understand a variety of University-level materials. Some students may be referred to noncredit reading classes offered through the Program of Academic Support Services at the Learning Skills Center, based on their STEP reading results.

All newly admitted students will receive a detailed placement testing brochure describing the exams and the testing schedule for the next quarter. Students should take required exams before registering for classes and should discuss their results with an academic counselor or advisor. Students enrolling for the first time in fall quarter are strongly advised to take placement tests at the earliest possible date (usually mid-May) in order to allow time to receive their results and discuss them with an academic counselor during the summer registration period.

Further information on placement testing and the testing schedule may be obtained by telephoning the Placement Testing Office at (714) 856-6207. The Placement Testing Office is part of the Program of Academic Support Services (PASS), described in a later section.

University Subject A Examination

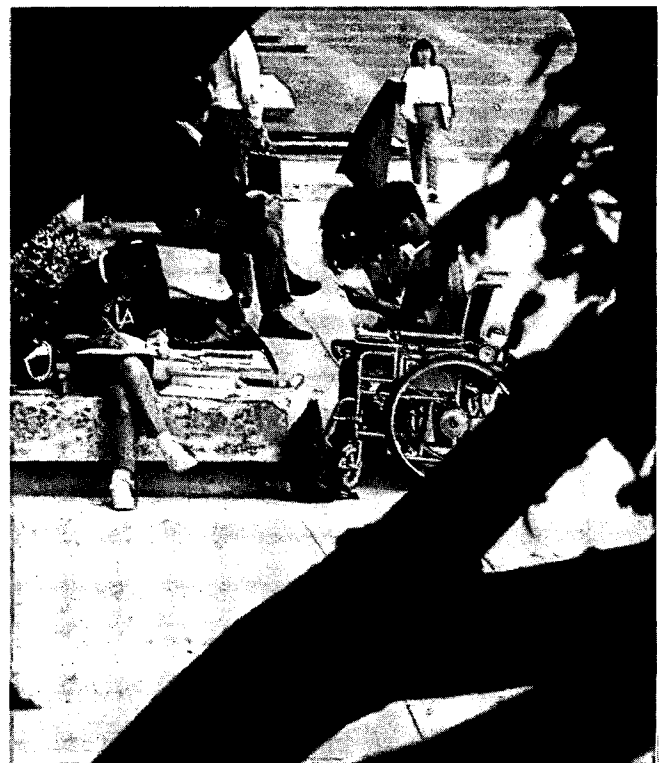
The University of California system has established the Universitywide Subject A Examination (see University Requirements). Results from this examination are used to place students in UCI writing and, if needed, ESL courses. There is a \$35 nonrefundable administrative fee associated with the examination. The fee payment process and waiver information are explained in materials students receive in April from the Educational Testing Service. Students who receive admission application fee waivers will automatically have this exam fee waived. Please refer to the section on Requirements for a Bachelor's Degree for complete information on the Universitywide Subject A Examination.

Academic Advising

At the time of admission to UCI every undergraduate student is assigned to the school or program that offers the student's selected major. Students who have not declared a major receive assistance from the General Studies Advising Program until they select an academic major.

Jurisdiction over all questions of academic regulations and academic standing rests with the dean or director of the school or program to which a student is assigned. 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 or director 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 or director (see separate listing). A student may request a change of advisor through the chief academic advisor or the dean of the unit.



A slice of campus life: UCI students keep fit through participation in intercollegiate sports, physical education courses, and campus recreation programs; the Career Planning and Placement Center provides a wealth of resources and services to students and alumni; shady spots for study breaks are provided by the campus' 11,000 trees, a legacy from UCI's Founding Chancellor, the late Daniel G. Aldrich, Jr.

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 and programs, 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. An appropriate time for the initial contact is during the week prior to the beginning of the student's first classes at UCI, or earlier at the time of registration if this is possible. Thereafter, consultation between student and advisor at the time of registration for each subsequent quarter is desirable. 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 the beginning of classes for advice concerning class enrollment and to pick up a printed copy of their Class Verification and Identification Card. These procedures for new students and provisions for continuing students are explained in detail in the quarterly *Schedule of Classes*.

Advising Personnel

Area Code (714)

Biological Sciences

Hung Fan, Dean (Acting)	331 SH	856-5314
George Lauder, Associate Dean	331 SH	856-5314
Wendell M. Stanley, Jr., Associate Dean for Undergraduate Affairs and Chief Academic Advisor	BSSA	856-5318
Michael Chennault, Counselor	BSSA	856-5318
Minh Dinh, Counselor	BSSA	856-5318
Margaret Doedens, Counselor	BSSA	856-5318
Cindy Eddleman, Counselor	BSSA	856-5318
Jessica Henderson, Counselor	BSSA	856-5318
Marsha Holland, Counselor	BSSA	856-5318
Theresa Klonecky, Counselor	BSSA	856-5318
Adelle Park, Counselor	BSSA	856-5318
Carolyn C. Willmann, Counselor	BSSA	856-5318

Engineering

William A. Sirignano, Dean	305 REC	856-6002
Gerard C. Pardoen, Associate Dean for Undergraduate Student Affairs	114 REC	856-6737
Allen Stubberud, School Administrator for Research and Graduate Studies	314 REC	856-4841
Nancy DaSilva, Graduate Faculty Advisor for Biochemical Engineering	516B EGR	856-8288
Terese Olson, Graduate Faculty Advisor for Civil Engineering	112 ICEF	856-7188
Chin Lee, Graduate Faculty Advisor for Electrical and Computer Engineering	416F EGR	856-7462
Derek Dunn-Rankin, Graduate Faculty Advisor for Mechanical Engineering	744J EGR	856-8745
Dee Pope, Senior Academic Counselor	114 REC	856-6749

Robin C. Alward, Counselor	114 REC	856-6749
Leigh A. Richard, Counselor	114 REC	856-6749
John D. Sommerhauser, Graduate Counselor	314 REC	856-6475

Fine Arts

Robert Hickok, Dean	300 FAT	856-6611
Kate Davy, Associate Dean	300 FAT	725-2397
Susan Lee Sills, Senior Academic Counselor	105 FAT	856-6646
Arielle Anne Read, Academic Counselor	105 FAT	856-6646

Graduate School of Management

Dennis J. Aigner, Dean	347 GSM	856-6855
Jone Pearce, Associate Dean	301 GSM	856-4060
Carla Larsson, Senior Academic Counselor	213 GSM	856-5232
Denise Patrick, Counselor	219 GSM	856-5232
Julie Sully, Counselor	217 GSM	856-5232

Humanities

Terence D. Parsons, Dean	112 HAB	856-5131
James L. Calderwood, Associate Dean, Graduate Study	117 HAB	856-5557
Linda M. Georgianna, Associate Dean, Undergraduate Study and Chief Academic Advisor	108 HAB	856-5132
Graduate Counselor	101 HAB	856-6720
Lisa Payne-Miller, Academic Counselor	102 HAB	856-5132
Cathy Smith, Senior Academic Counselor	104 HAB	856-5132
Carol Thompson, Academic Counselor	106 HAB	856-5132

Information and Computer Science

Leon J. Osterweil, Chair	444 CS	856-7405
Nancy Leveson, Associate Chair for Graduate Studies	458B CS	856-5517
Lubomir Bic, Associate Chair for Undergraduate Studies and Chief Academic Advisor	468 CS	856-5156
Marianne Schnaubelt, Senior Academic Counselor	468 CS	856-5156
Essie Lev, Counselor	468 CS	856-5156
Peggy Rose, Counselor	468 CS	856-5156
Mary Day, Graduate Counselor	406B CS	856-5597

College of Medicine

Please refer to the College of Medicine section.

Physical Sciences

Harold W. Moore, Dean	220 PS	856-6506
Robert Doedens, Associate Dean and Chief Academic Advisor	231 PS	856-6507
Tina Arth, Academic Counselor	231 PS	856-6507
Barbara Haier, Academic Counselor	231 PS	856-6507
Kathryn Harvey, Academic Counselor	231 PS	856-6507

Social Ecology

Daniel Stokols, Director	202B SE	856-6094
C. David Dooley, Associate Director for Undergraduate Studies and Chief Academic Advisor	212B SE	856-5293
Karen S. Rook, Director for Graduate Studies	212C SE	856-7069
Kay Helwig, Graduate Counselor	270 SE	856-5917

Jill Vidas, Assistant Graduate Counselor	270 SE	856-5918
Carol Stanley, Senior Academic Counselor	163 SE	856-6861
Jean Martinez, Counselor	163 SE	856-6861
Ana Pereira, Academic Counselor	163 SE	856-6861
Janet Stevens, Field Study Coordinator	163 SE	856-6861
Social Sciences		
William R. Schonfeld, Dean	607 SST	856-6801
Myron L. Braunstein, Associate Dean for Graduate Studies (Acting)	637 SST	856-7274
Kathy Alberti, Graduate Counselor	637 SST	856-5924
Ivonne Maldonado, Graduate Counselor	638 SST	856-7352
Caesar D. Sereseres, Associate Dean for Undergraduate Studies and Chief Academic Advisor	639 SST	856-7027
Tony Esposito, Undergraduate Counselor	120 SST	856-6803
Richlyn Evins, Undergraduate Counselor	120 SST	856-6803
Ramón Muñoz, Undergraduate Counselor	120 SST	856-6803
Carol J. Nance, Senior Undergraduate Counselor	120 SST	856-6803
Teacher Education		
Alan R. Hoffer, Director	485 SST	856-6422
Nick V. Messina, Associate Director for Admissions and Placement and Chief Academic Advisor	423 SST	856-7831
Treacy Nollau Halvorsen, Counselor	411 SST	856-6673
Cynthia Grzybek, Counselor	415 SST	856-6673
Carolyn Bouldin, Coordinator Teacher Intern Program	405 SST	856-5910
Unaffiliated Students Advising		
Michael Butler, Dean of Undergraduate Studies	256 Admin.	856-6987
Senior Academic Counselor	256 Admin.	856-6987
Kimberly Ayala, Counselor	256 Admin.	856-6987

Honors Programs

UCI offers a comprehensive Campuswide Honors Program which is open to outstanding students from all majors and includes a specific curriculum and extra benefits from the freshman through senior years. A variety of major-specific honors programs also are available for students at the upper-division level.

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 23-million-volume University of California Library system (of which UCI Library collections number some 1.4 million volumes) and of the numerous state-of-the-art laboratories on campus.

Many honors students choose to participate in the Education Abroad Program and/or the International Opportunities Program during their junior year. See the Center for International Education section.

Campuswide Honors Program

The Campuswide Honors Program is available to selected high-achieving students from all academic majors from their freshman through senior years. During the freshman, sophomore, and junior years, depending upon the individual's course of study, participants enroll in small, honors-level sections of courses and in special honors courses which satisfy the University's breadth requirements in lower-division writing, humanistic inquiry, natural sciences, and social and behavioral sciences. These honors sequences provide an interdisciplinary approach to major subjects and issues. Faculty from a variety of disciplines are chosen especially for their teaching ability and scholarship. During the junior and senior years, participants develop creative projects and conduct original research under the direct supervision of faculty members. Students continue their intellectual exchange of ideas and experiences through small, honors-level seminars. Campuswide Honors students participate in a variety of social and cultural events with the faculty during the year including a weekly coffee hour, museum visits, and attending concerts, ballets, and plays. Additional information is available from the Campuswide Honors Program; telephone (714) 856-5461.

Major-Specific Honors Programs

Honors programs for qualified junior- and senior-level students also are available to Drama majors in the School of Fine Arts; to all majors in the School of Humanities; to Physics majors in the School of Physical Sciences; to Economics, Political Science, and Psychology majors in the School of Social Sciences; to Information and Computer Science majors; and to Social Ecology majors. The focal point of each of these programs is the development of analytical and research skills through the pursuit of research under faculty supervision. Additional information is included in the sections on these majors.

Scholarship Opportunities Program

High-achieving undergraduate students are encouraged to learn how they can compete successfully for the most prestigious scholarships available for undergraduate and graduate education and to begin learning about the process in their freshman year or as early as possible. Opportunities include undergraduate scholarships and research grants and graduate fellowships. The Scholarship Opportunities program, offered through the Campuswide Honors Program, provides information, applications, and advice to qualified students; telephone (714) 856-5461.

Preparation for Graduate or Professional Study

Undergraduate students ought to 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.

For information about graduate or professional study in a given field, students may consult the graduate advisor or an academic counselor in the academic unit corresponding to the area of interest. Also, the Career Planning and Placement Center frequently sponsors seminars on specific career areas and offers a number of services useful to those considering graduate or professional study.

Additional Educational Opportunities

There are several supplementary educational programs available to students at UCI: University Extension, Summer Sessions, the Air Force Reserve Officer Training Corps (ROTC) program, the Army ROTC program, the Education at Home Program, and the Center for International Education. See the Orientation, Major Campus Publications, and Supplementary Educational Programs section for additional information.

Requirements for a Bachelor's Degree

There are four groups of requirements that must be met to earn a baccalaureate degree from UCI. They are general University of California requirements, UCI requirements, school or program requirements, and degree-specific requirements. General University and UCI requirements are described in detail 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 Disabled Student Services Office (see page 78). Office 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) those in effect at the time of entrance or those subsequently established after entrance.

A student who seeks readmission to UCI more than three consecutive quarters after withdrawing from student status must adhere to the graduation requirements in effect at the time of readmission or 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 transfer to UCI; (b) those subsequently established; or (c) those in effect when the student entered a previous collegiate institution, provided entry was not more than four years prior to the time of transfer to UCI.

Transfer students who complete one of the following options will be considered to have met the total UCI breadth requirement except the upper-division writing requirement: (a) students who transfer from a four-year institution and who have completed the general breadth requirements of that college, upon approval of petition; (b) students who transfer from another UC campus and have met the general breadth requirement of that campus (may be completed at UCI if in progress at the time of transfer); or (c) transfer students who have completed the UC Transfer Core Curriculum or the Intersegmental General Education Transfer Curriculum prior to transfer.

University Requirements

English ("Subject A")

Every undergraduate must demonstrate upon entrance to the University an acceptable level of ability in English composition.

This requirement may be met *before* entrance by:

1. Achieving a grade 5, 4, or 3 in either of the two College Board Advanced Placement Examinations in English; *or*
2. Achieving a score of 600 or better in the College Board English Composition Achievement Examination; *or*
3. Completing the California State University English Equivalency Test with "Pass for Credit"; *or*
4. Entering the University with credentials from another college which show the completion of an acceptable one-quarter (four units) or one-semester (three units) course in English composition with a letter grade of C or better.

Those students who have not met the Subject A 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 Humanities 20A-B-C-D (Writing for Students for Whom English is a Second Language) must enroll in a Subject A course (English and Comparative Literature WR39A or Humanities 1A S/A) immediately after they are authorized to do so.

The Subject A requirement may be met *after* admission by one of the following three options:

1. Passing the Universitywide Subject A Examination given in mid-May (and on subsequent dates) to all entering freshmen admitted for fall quarter, 1991 (see Placement Testing). Transfer students who have not satisfied the Subject A requirement should contact the UCI Composition Program Office (220 Humanities Office Building) for evaluation; telephone (714) 856-6717.
2. Enrolling in sections of the Humanities Core Course designated "S/A." (NOTE: Students held for Subject A 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 Subject A 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 Subject A 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. Students who score below 600 on the College Board English Composition Achievement Test and who have not followed option (1) or (2) above may satisfy the requirement by taking English and Comparative Literature WR39A and receiving a letter grade of at least a C in that course.

Once a student matriculates to UCI, courses from other institutions may not be used to satisfy the Subject A requirement.

American History and Institutions

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

1. Completion in 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.
2. Receiving a score of 5, 4, or 3 in the College Board Advanced Placement Examination in United States History.
3. Receiving a score of 500 or higher in the College Board Achievement Examination in American History and Social Studies.
4. Presentation of a certificate of completion of the requirement at another California institution.
5. Completion at another 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.
6. Completion at UCI, with a grade of C or better, of one course selected from History 10, 40A, 40B, or 40C *and* either Political Science 21A or 53A.

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.)

Residence Requirement

Credit for the last 36 units of work immediately preceding graduation 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.

Breadth Requirement

The breadth requirement is designed to ensure that UCI graduates will have been exposed to a broad spectrum of fundamental areas of intellectual experience. It 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 breadth requirement, courses are required in each of the following categories: **Writing; Natural Sciences; Social and Behavioral Sciences; Humanistic Inquiry; Foreign Language, Linguistics, Logic, Mathematics, or Computer Science; and Multicultural and International/Global Studies.**

The specific course combinations and sequences in each area which may be used by students to satisfy the requirement are listed below. A number of the courses listed are available in more than one academic unit. When a breadth course is cross-listed with another course, that course also is available for fulfillment of the breadth requirement. Students should refer to the actual descriptions of the courses to determine which are cross-listed.

These course combinations were selected to ensure that students, in meeting the requirement, be exposed to subject matter, problems, and techniques which would serve as a first introduction to an academic area, as well as to a connected set of courses which provide a coherent experience in that academic area.

With the exception of category I (Writing) and category VII (Multicultural and International/Global Studies), a student may count toward breadth no more than a year of work taken within the discipline of the major. For example, a student majoring in Philosophy may count no more than three quarter courses in philosophy toward breadth categories II, III, IV, or V.

Students fulfill the UCI breadth requirement by completing courses from the list which follows. Students can select from among a variety of courses, depending upon their area of interest. Some of the course combinations available consist of multiple-quarter courses (such as Chemistry 1A-B-C under the Chemistry subsection of "II. Natural Sciences"). Multiple-quarter courses are referred to as being "sequential," meaning that the course work in the earlier courses is prerequisite to the later course work. Students must take each part of a sequential course in alphabetical order (e.g., students must take Chemistry 1A before either 1B or 1C). Sequential courses are separated by hyphens. Other course combinations consist of single-quarter courses (e.g., Anthropology 2A, 2B, 2C under the Anthropology subsection of "III. Social and Behavioral Sciences") which are related to one another but for which no course in the combination is preparatory to any other course in the combination. Single-quarter course combinations may be taken in any order. Single-quarter courses are separated by commas. Semicolons separate complete course combinations.

Breadth Categories

I. Writing Requirement. Because of the importance of writing in every academic discipline, the University is committed to developing the writing skills of its students at all levels and in all areas. The Writing Requirement expresses this commitment, but the concern for and attention to clear, accurate writing is expected in all courses.

The Writing Requirement consists of three courses beyond the Subject A Requirement. Except where otherwise noted below, students must satisfy the Subject A Requirement *prior to* fulfilling the Writing Requirement.

Two of the three courses required must be lower-division courses and normally must be completed prior to the junior year (or in the case of transfer students within the first year of residency). The third course must be an upper-division course, and it must be taken only after the successful completion of 84 quarter units (achievement of junior status) *and* completion of the lower-division requirement.

Once a student matriculates to UCI, the student can take only UCI courses in satisfaction of the lower-division and upper-division writing requirements.

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. English and Comparative Literature WR39B (Expository Writing) and English and Comparative Literature WR39C (Argument and Research).
2. Two quarters of the writing component of the Humanities Core Course (Humanities 1A-B-C) beyond satisfaction of the Subject A requirement. NOTE: Students held for Subject A 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 minimum grade of C (or a Pass) will satisfy the Subject A requirement. For these students, the 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 Subject A must enroll in Humanities 1B S/A during the winter quarter and satisfy the requirement by earning a 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.
3. Students who complete English and Comparative Literature WR39B 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 or nonfiction and journalism: English and Comparative Literature WR30, WR31, WR32, or WR38.

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. English and Comparative Literature WR139W.
2. An approved upper-division course in nonfiction and journalism or creative writing. Such courses frequently have special prerequisites. 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.
3. An upper-division course designated on a list of approved courses in the quarterly *Schedule of Classes* as approved for satisfaction of the requirement. 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.
4. By examination (refer to the quarterly *Schedule of Classes*). Juniors and seniors will be exempted from the upper-division course requirement if they successfully complete the Upper-Division Exemption Examination in English Composition. This exam may be taken only once.

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. Natural Sciences. Students must select a three-course combination from one of the following areas:

Biological Sciences: Students may select any three courses from Biological Sciences 1A, 1B, 1C, 1D, 1E, 1F, 1G, 45, 65, 79, 80, 81.

Chemistry: Chemistry 1A-B-C and 1LB-LC or 1LAE-LBE.

Physics: Physics 3A-B-C and 3LA-LB; 5A-B-C and 5LB-LC; three courses from 20A, 20B, 20C, 20D; 17A-B plus one course from Physics 16, 20A, 20B, 20C, 20D.

Social Ecology: Social Ecology E3, E4, E5.

III. Social and Behavioral Sciences. Students must take an introductory course followed by two courses in one area, or an introductory course followed by a second course in the same area plus an introductory course from another area. Introductory courses are numbered 1-12 or Comparative Culture or Economics 20.

Anthropology: Anthropology 2A, 2B, 2C, 2D.

Comparative Culture: Comparative Culture 20A, 20B, 20C.

Economics: Economics 1, 20A-B-C.

Geography: Social Sciences 5A, 5B, 5C; 18A, 18D.

Interdisciplinary: Social Ecology H20A-B-C or Social Sciences H1E-F-G.

Political Science: Social Ecology J80; Political Science 6A, 6B, 6C, 21A, 31A, 41A, 51A, 54A, 62A; either Sociology 71 or 72 (if Political Science 54A has not been taken).

Psychology: Social Ecology S9, S11, S86; Psychology 7A, 13A, 21A, 46A, 55A, 56L; Sociology 31.

Sociology and Social Ecology: Social Ecology 10, E8, J4, J40, S86; Social Sciences 13A; Sociology 1, 2, 3, 23, 24, 31, 62, either 71 or 72.

IV. Humanistic Inquiry. Students must select a three-course series from one of the following three areas:

Arts: Art History 35A-B-C; Art History 40A-B-C; Art History 42A-B-C; Studio Art 30A-B-C; Studio Art 35A-B-C; Dance 90A-B-C; Dance 91A-B-C; Drama 40A-B-C; Music 4A-B-C; Music 40A-B-C.

Humanities: Classics 35A-B-C; History 40A, 40B, 40C; History 41A, 41B, 41C; History 42A, 42B, 42C; History 43A, 43B, 43C; History 50A, 50B, 50C; Humanities 1A-B-C; Humanities 55A, 55B, 55C; Philosophy 1, 4, 5; Philosophy 1, 6, 7; Philosophy 10, 12, and either 11 or 13; History 60, Philosophy 60, and either History 186 or Philosophy 160.

Literature: Classics 50A-B-C; East Asian Languages and Literatures 50A, 50B, 50C; East Asian Languages and Literatures 60A, 60B, 60C; English and Comparative Literature CL 50A-B-C; English and Comparative Literature E6, E7, E8; English and Comparative Literature E 28A-B-C; French 50A-B-C; Russian 20, 30, 40; Spanish 50A-B-C.

V. Foreign Language, Linguistics, Logic, Mathematics, Computer Science. Students must select a three-course series from one of the following four areas:

Computer Science: ICS 21, 22, 23.

Foreign Languages: Chinese 2A-B-C; Classics 2A-B-C; French 2A-B-C; German 2A-B-C; Greek 25, 101, 102; Italian 2A-B-C; Japanese 2A-B-C; Latin 25, 101, 102; Portuguese 1A-B-C plus three upper-division Portuguese courses chosen from among 140A-B through 145; Russian 2A-B-C; Spanish 2A-B-C.

Linguistics: Linguistics 3, 110, 120.

Logic and Mathematics: Anthropology 10A-B-C; Economics 10A-B-C; Mathematics 2A-B and either 2C, 7, or 13; Mathematics 6A, 6B, 6C; Philosophy 30A-B, and either 31, 32, or 130A; Psychology 10A-B-C; Social Sciences 10A-B-C; Social Sciences 100A-B-C; Sociology 10A-B-C.

Effective for freshmen entering college fall 1992 and thereafter, the current breadth Category V will be separated into two categories:

Mathematics and Symbolic Systems (category V), which may be satisfied by a one-year approved sequence which teaches formal reasoning within symbolic systems (e.g., mathematics, logic, computer science, linguistics); and

Language Other Than English (category VI), which may be satisfied by either (a) one year (three quarters) of college-level study in a language other than English; (b) credit for three years of high school study 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; (d) a score of 550 or better on a College Board Achievement Examination in a language other than English; (e) participation in the Education Abroad Program (EAP) in a non-English-speaking country; or (f) the equivalent as determined by an appropriate and available means of evaluation. In fall 1993 the requirement will be increased to four quarters of college-level study or the equivalent.

VII. Multicultural and International/Global Studies. Students must select one course in multicultural studies and one course in international/global studies from the following lists. In fulfilling category VII, students may use courses which are also being used in fulfillment of other breadth categories. For example, Anthropology 2A simultaneously satisfies category VII-B and a portion of category III. In addition, VII-B may be fulfilled by one quarter's participation in the Education Abroad Program (EAP).

Multicultural (VII-A): Anthropology 121J, 125X, 131F, 161T; Comparative Culture 20A, 20B, 20C, 21A, 31A-B, 100E; 120A, 120B, 120D, 120E, 120G, 120H, 120L, 120N, 120M, 120R-S, 130B, 130H, 130J, 140B, 140C, 140D, 140E, 140F, 169; English and Comparative Literature CL9, CL105, E105; History 12, 150A, 150B, 152A, 152B, 152C, 152D; Humanities 1A, 55A, 55B, 55C; Music 78; Psychology 174A, 174B; Spanish 110C, 133A-B, 134, 135; Social Ecology E102, S174; Sociology 63.

International/Global (VII-B): Anthropology 2A, 60A, 121A, 121D, 125A, 125B, 125P-Q, 126N, 135A, 135H, 160M, 162A, 162N, 163A, 163G, 163T, 164K, 174A; Art History 40A-B-C, 42A-B-C; Chinese 3A-B-C, 100A-B-C, 101A-B-C, 198; Comparative Culture 130F, 140F, 140G, 159; Dance 91A-B-C, 92; East Asian Languages and Literatures 50A, 50B, 50C, 60A, 60B, 60C, 110, 120, 150, 198; Economics 148D, 152A, 152P-Q; French 50A-B-C, 60, 101A-B-C, 110, 115, 116, 117, 118, 119, 120, 125, 127, 139, 150, 160; German 100A-B-C, 101, 117, 118, 119, 120, 150, 160; History 11, 41A, 41B, 41C, 42A, 42B, 42C, 43A, 43B, 43C, 50A, 50B, 50C, 110A, 110B, 110C, 132A, 132B, 132C, 133A, 133B, 133C, 133D, 134D, 135A, 135B, 135C, 136A,

136B, 136C, 137A, 137B, 146B, 146C, 172A, 172B, 174A, 174B, 177, 178; Humanities 163G, 170EC 170EJ, 172F; Italian 60, 100A-B, 101A-B-C, 150, 160; Japanese 3A-B-C, 101A-B-C, 198; Political Science 6A, 41A, 42A, 151A, 151B-C, 151D, 152B, 152C, 152D, 152F, 154B, 154C; Portuguese 140A; Russian 20, 25, 30, 40, 150A, 150B, 150C; Spanish 10A-B, 101A-B-C, 101D, 110A-B, 116, 117, 130A, 130B, 130C, 131A, 131B, 131C, 150, 160, 185; Social Ecology E143, S177; Sociology 44, 77.

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 (e.g., the physics course requirement in the School of Biological Sciences) may also help fulfill the UCI breadth 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 should have declared a major no later than the beginning of their junior year, having made certain that the background and the preparation prerequisite to junior and senior work in the major have been accomplished. New and continuing undergraduate students should read the section on Academic Advising for Planning an Undergraduate Program; transfer students should also 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 should file an Application for Graduation at the appropriate dean's office, preferably during the first quarter of the senior year, but no less than six months before the expected day of graduation. Specific deadline dates for filing an Application for Graduation are established quarterly by each academic unit so that candidates' academic records can be reviewed to verify that all graduation requirements have been met. These dates vary among academic units. Please refer to the quarterly *Schedule of Classes* for these deadlines.

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 Requirements for a Bachelor's Degree section on pages 50–53.

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 which has been mutually determined with a community college in accordance with the policies stated on page 51 as being acceptable toward completion of the UCI breadth 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 the Transfer Student Services Office about courses that may be used to satisfy the UCI breadth requirement.

With the exception of students who complete the UC Transfer Core Curriculum or the Intersegmental General Education Transfer Curriculum, transfer students should not feel that the breadth requirement must be completed prior to matriculating to UCI. The breadth 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 in the first year of residency at UCI.

Students transferring to UCI must satisfy the UCI breadth requirement by completing either: (a) the current UCI breadth requirement, (b) one of the options listed in the Catalogue Rights section on page 50 (c) the UC Transfer Core Curriculum, or (d) the Intersegmental General Education Transfer Curriculum.

Transfer Students: Completion of the UCI Breadth Requirement

Breadth Categories

I. Writing. The lower-division writing requirement is met by taking an approved one-year sequence in English composition. Courses used to meet the lower-division writing requirement must be completed with a minimum grade of C (or a Pass or Credit grade equivalent to C). Transfer students may not count any course designed exclusively for the satisfaction of Subject A toward the completion of the lower-division writing requirement. Any student entering UCI with only one semester or one quarter of English composition through which the Subject A requirement is fulfilled will not have satisfied any part of the writing requirement. Once a student matriculates to UCI, the student can take only UCI courses in satisfaction of the lower- and upper-division writing requirements.

II. Natural Sciences. This requirement is met by (a) taking an approved one-year sequence in *one* of the following areas: general biology, general chemistry, basic physics; or by (b) taking two-semester or three-quarter approved courses in biological sciences or physical sciences with the exception of mathematics. These courses may or may not include a laboratory.

III. Social and Behavioral Sciences. This requirement is met by taking a year of approved work in any of the following areas: anthropology, comparative culture, economics, geography, political science, psychology, sociology, or social ecology. Students on the semester system may elect to take an introductory course followed by a second course in the same area or an introductory course from each of any two areas. Students on the quarter system may elect to take an introductory course followed by two courses in one area, or an introductory course followed by a second course in the same area plus an introductory course from another area. (History, for the purposes of the breadth requirement, is not considered a social or behavioral science but rather an area of humanistic inquiry.)

IV. Humanistic Inquiry. This requirement is met by taking an approved one-year sequence in *one* of the following areas: classics, history, philosophy, humanities, English literature, comparative literature, women's studies, dramatic literature, history of art, history of music. Performance courses may *not* be used in satisfaction of this requirement.

V. Foreign Language, Linguistics, Logic, Mathematics, Computer Science. This requirement is met by taking an approved one-year sequence in *one* of the following areas: mathematics, logic, linguistics, computer science, or completion of the second year in a foreign language.

Effective for freshmen entering college fall 1992 and thereafter, the current breadth Category V will be separated into two categories:

Mathematics and Symbolic Systems (category V), which may be satisfied by a one-year approved sequence which teaches formal reasoning within symbolic systems (e.g., mathematics, logic, computer science, linguistics); and

Language Other Than English (category VI), which may be satisfied by either (a) one year (three quarters) of college-level study in a language other than English; (b) credit for three years of high school study 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; (d) a score of 550 or better on a College Board Achievement Examination in a language other than English; (e) participation in the Education Abroad Program (EAP) in a non-English-speaking country; or (f) the equivalent as determined by an appropriate and available means of evaluation. In fall 1993 the requirement will be increased to four quarters of college-level study or the equivalent.

VII. Multicultural and International/Global Studies. This requirement is met by completing: one course in multicultural studies and one course on international/global issues. One quarter's participation in the Education Abroad Program (EAP) also satisfies the international/global issues portion of the requirement. Courses satisfying the multicultural requirement specifically address the history, society, and/or culture of one or more minority groups in California and the United States. Courses satisfying the international/global requirement focus on significant cultural, economic, geographical, historical, political, and/or sociological aspects of one or more foreign countries.

The UC Transfer Core Curriculum and Intersegmental General Education Transfer Curriculum

Transfer students may fulfill the UCI breadth requirement by completing the UC Transfer Core Curriculum (TCC) or the Intersegmental General Education Transfer Curriculum (IGETC). The TCC is an option for students who entered college prior to fall 1991; the IGETC is an option for students who enter college fall 1991 and thereafter. The TCC and the IGETC consist of a series of subject areas and types of courses which, if completed prior to transfer, will satisfy the breadth and general education requirements at any campus of the University of California. Fulfillment of the TCC or the IGETC does not satisfy the UCI upper-division writing requirement. Students who do not complete the TCC or the IGETC prior to transferring to UCI must fulfill the UCI breadth requirement in its entirety.

Courses used to fulfill the TCC or 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 TCC or the IGETC are available at California Community Colleges and UCI's Transfer Student Services Office.

UC Transfer Core Curriculum

1. **Foreign Language:** Two years of high school study with a grade of C or better, or equivalent proficiency demonstrated by college courses or performance tests, such as earning a minimum score of 550 on an appropriate College Board Achievement Examination in a foreign language.
2. **English Composition:** One-year lower-division English composition sequence. Courses designed exclusively for satisfaction of remedial composition cannot be counted toward fulfillment of this requirement.
3. **Mathematics/Quantitative Reasoning:** One-semester or two-quarter courses in mathematics or mathematical statistics or a minimum score of 600 on the Mathematics section of the Scholastic Aptitude Test (SAT), or 550 on the College Board Achievement Examination in Mathematics (Level I or Level II). Courses on the application of statistics to particular disciplines may not be used to fulfill this requirement.
4. **Arts and Humanities:** Three semester or four quarter courses in drama, music, dance or the visual arts, history, literature, classical studies, religion, and philosophy may fulfill this requirement. At least one course must be in the arts and one in the humanities. Performance or studio courses may not be used to fulfill this requirement.
5. **Social and Behavioral Sciences:** Three semester or four quarter courses in anthropology, economics, ethnic studies, political sciences, psychology, sociology, or interdisciplinary social sciences.
6. **Physical and/or Biological Sciences:** Three semester or four quarter courses in general biology, general chemistry, basic physics, or physical sciences (with the exception of mathematics). At least one of the courses must include a laboratory.

Intersegmental General Education Transfer Curriculum

1. **Language Other Than English:** Proficiency equivalent to two years of high school study.
2. **English Composition:** One course in English composition and a second course in critical thinking or English composition.

3. **Mathematics/Quantitative Reasoning:** One course in mathematics or mathematical statistics which has a prerequisite of intermediate algebra. Courses on the application of statistics to particular disciplines are not acceptable.
4. **Arts and Humanities:** Three courses, at least one in arts and one in humanities.
5. **Social and Behavioral Sciences:** Three courses in at least two different disciplines.
6. **Physical and Biological Sciences:** One physical science and one biological science course; one must include a laboratory.

Information for Transfer Students: School, Departmental, and Major Requirements

Transfer students are required to meet school, department, and major requirements described in the academic unit sections of the *Catalogue*.

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.

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 45 UCI quarter courses, are needed.)

California Community Colleges

Students may find it advantageous or necessary to complete the first two years of a University of California undergraduate program at one of the California Community Colleges, which are an integral part of the State's system of higher education. A student may earn a maximum of 105 quarter units (70 semester units) toward a University degree in a community college. No further unit credit may be transferred from a community college, although subject, major, or breadth credit for courses taken will still be granted.

Students anticipating transfer to UCI are urged to consult with their community college counselors. The community college counselor, with the aid of that college's UC transfer course list, can advise students about courses which will transfer to the University. Lists for each community college are updated every other year and tell which courses will transfer and for how many units. In addition to the community college counselor, staff in the Office of Admissions and Transfer Student Services Office keep current copies of the lists and can advise students about the transferability of courses.

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 Office of Admissions. 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 campuses of the University. 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 breadth requirements. Although course equivalencies for the breadth 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.

Many community colleges have entered into articulation agreements with UCI so that the specific application of their courses to UCI's University, school, and 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 breadth, school, and departmental requirements as possible prior to transferring to UCI.

Students are urged to consult community college counselors or the Transfer Student Services Office 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.

Enrollment and Other Procedures

Except where noted, all information applies to both undergraduate and graduate students. Additional information concerning enrollment and academic policies applying only to graduate students is given in the Graduate Studies and Research section.

Enrollment and Payment of Fees

To receive academic credit for regular courses and other supervised instruction or research, a student must be officially enrolled prior to undertaking such activities. **Registration does not become official until all required fees have been paid, and the student enrolls in classes with the Registrar. Students are responsible for ensuring that their course enrollments as indicated on the Class Verification and Identification Card are correct.**

Registration materials are available from the Registrar's Office approximately six weeks before the beginning of each quarter. A quarterly calendar of dates for submission of enrollment materials and payment of fees is included in each quarterly *Schedule of Classes*. The *Schedule of Classes* booklet is distributed to new and continuing students and also may be purchased at the University Bookstore approximately six weeks prior to the beginning of each quarter.

The general procedures for enrollment 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 seriously consider attending one of the Student-Parent Orientation Program (SPOP) sessions during the summer for academic advising and enrollment assistance.
2. Pay careful attention to deadlines. Enroll in classes during the published regular enrollment period. Return the updated student information form to the Registrar.
3. Pay required fees to the Cashier. Any other outstanding obligations must be satisfied at this time also.

NOTE: Late fee payment and/or late enrollment in classes may require the student to enroll in classes using the Add-card procedure.

Class Verification and Identification Card

After payment of fees and enrollment in classes, a Class Verification and Identification (CV & ID) card is available for each student. The card lists the courses in which a student is enrolled. Changes to course enrollments after issuance of the CV & ID card are handled through Add, Drop, or Change of Grading Option cards, available from the student's academic counseling office or the Registrar.

New undergraduate students obtain their CV & ID card in their academic counseling offices, where they may also obtain advice concerning their academic programs.

Continuing undergraduate students and graduate students should consult the quarterly *Schedule of Classes* for instructions on where to secure their cards.

The CV & ID card is certification of the student's class enrollment and is evidence that the student is registered at UCI and is entitled to Library privileges. In addition, the card provides identification for Associated Students functions. If the card is lost, there is a \$3 replacement charge. Inquiries regarding the replacement of lost cards should be directed to the Registrar's Office.

Late Enrollment and Payment of Fees

Students who do not enroll in classes during the published period are subject to a late service fee. The late service fee is graduated. Between the deadline and the end of the second week of classes, the late service fee is \$25. Thereafter it increases to \$50. A signature of the student's dean is required for late enrollment.

Students who do not pay all required fees to the Cashier's Office during the published period for fee payment are subject to a late service fee. This fee is also graduated: \$25 through the end of the second week of classes; \$50 thereafter.

The student is subject to *both* late service fees (either \$50 or \$100) if fees are not paid to the Cashier's Office and the student does not enroll in classes by the deadlines, which are published quarterly in the *Schedule of Classes*.

To avoid the expense and inconvenience of late enrollment, students are urged to enroll and pay fees well before the published deadlines. Students with financial need should make advance arrangements with the Financial Aid Office, or another source, to have funds available when fees are due. The Registrar does not have authority to allow a student to pay fees after the deadline date or to waive the late fees, except in unusual cases where the University is responsible for the late transaction. A student who is allowed to apply late and, as a result, must pay fees and enroll late, is required to pay late service fees.

Change of Class Enrollment

After officially enrolling in classes with the Registrar, a student may add or drop courses, change sections of a course, or change the grading option by completing an Add, Drop, or Change of Grading Option Card, available from the student's academic counseling office or the Registrar's Office. There is a \$3 service charge for all add, drop, or change transactions *received* in the Registrar's Office after the second week of classes.

An undergraduate student may not enroll in more than 20 units (excluding Physical Education) nor fewer than 12 units of course work during a given quarter without the permission of the student's academic dean. Changes to Pass/Not Pass grading must not cause the student to exceed the limitations to Pass/Not Pass enrollment.

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 Graduate Studies.

During the first six weeks of each quarter, a student may add classes provided approval to add each class is granted by the instructor in charge. To add a class, a student must obtain the instructor's signature of approval on an Add card, pay the service charge (if applicable), properly complete the Add card, and submit the card to the Registrar's Office no later than the end of the sixth week of instruction.

The dated signature of the instructor is always required and is valid for 10 working days.

To drop a class or change the grading option during the first two weeks of the quarter, a student must obtain the signature of the instructor in charge as evidence of notification on a Drop or Change of Grading Option Card and submit the card to the Registrar's Office no later than the end of the second week of instruction.

Students may drop classes from the third through the sixth week of a quarter, inclusive, only with the permission of the instructor in charge. A student wishing to drop a class during this period must obtain the signature of approval from the instructor in

charge on a Drop card, pay \$3 at the Cashier's Office, and submit the card to the Registrar's Office.

After the sixth week of a quarter, students may drop a course only with the permission of the instructor and the student's academic dean. Permission to drop after the sixth week can be granted only if the student is not failing the course and not subject to disqualification, and only if dropping the course would be to the educational benefit of the student, of the class as a whole, or both. To drop a class after the sixth week, a student must complete a Drop card, obtain the instructor's and the dean's signatures of approval, pay \$3 at the Cashier's Office, and submit the card to the Registrar's Office. Graduate students must have the approval of the Dean of Graduate Studies to drop a course after the sixth week.

A W notation will be recorded for each course dropped after the end of the sixth week of classes. The effective date of a "drop" is the date the approved Drop card is received in the Registrar's Office.

Every student enrolled in a laboratory course in which equipment is issued is responsible for the equipment when dropping a course and will not be permitted to drop until the equipment is accounted for.

Students are responsible for their official enrollment and must be officially enrolled in each class they attend. They must officially drop classes they have ceased attending. The student cannot simply discontinue attendance in a class; a Drop card must be filed before the last day of instruction for the quarter. Students are urged to verify their official enrollment early in the quarter. Students enrolling for the next quarter will find this information included with enrollment materials for the next quarter. Those students not enrolling for the next quarter can verify their official enrollment by inquiring at the Registrar's Office.

The Registrar's Office cannot accept Add, Drop, or Change cards after the last day of instruction of a particular quarter.

NOTE: Instructors and deans may have earlier deadlines than those mentioned above.

Part-Time Study

UCI offers several possibilities to pursue part-time study for credit leading to an undergraduate or graduate degree. Part-time study opportunities are available in academic units in which there exists good educational reason, as determined by the academic unit, to allow part-time study. For part-time study, quarterly course enrollment is limited to 10 units or less for undergraduate students and to eight units or less for graduate students; these limits include physical education units.

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

In approved part-time status, one-half of the Educational Fee and one-half of the Nonresident Tuition (if applicable) are assessed. Undergraduate petitions are available from academic counselors or the Registrar's Office; graduate students may obtain further information and petitions from the Office of Research and Graduate Studies. Since there are certain restrictions on receiving undergraduate credit for part-time course work, undergraduates interested in part-time study should read, in addition to the Undergraduate Admissions section, the sections on Expenses and Fees, and Financial Aid. Graduate students should refer to the Research and Graduate Studies section.

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 the Cashier's Office; failure to complete the physical examination; or failure to comply with admission conditions.

Each student who becomes subject to lapse of status action is given advance notice and ample time to deal with the situation. However, if the student fails to respond, 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.

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 grade reports are available at 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. When the degree has been certified by the student's dean, a student's academic record may not be altered except in those cases where a procedural or clerical error on the part of the instructor has occurred.

Transcript of Records

The transcript of a student's academic records will be released only upon receipt of a signed request of the student authorizing the release. Application may be made in person or by mail; telephoned requests cannot be honored because payment is due in advance. Application for a transcript should be submitted to the Cashier's Office with a check or money order payable to Regents-UC for the exact amount due. The fee for transcripts is \$3 per copy. 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.

Requests for transcripts by 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. Such transcripts can be released by the Registrar only to another college, university, or educationally related agencies such as the Law School Data Admissions Service (LSDAS) or the American Medical College Application Service (AMCAS). Such transcripts cannot be released to the person making the request in the student's stead.

When a student orders a transcript to be sent to another college, university, or agency, it is extremely important for the student to provide a complete, accurate mailing address to ensure delivery to the correct office. At least two weeks should be allowed for a transcript to be received by another institution or agency.

Verification of Student Status

There is a \$3 fee for each verification of student status performed by the Registrar's Office either at the window or by mail. Needs for which such verifications are performed include reference checks, bank loans, applications for good-student-driver insurance rates, and Social Security payments. For verification purposes, enrollment in 12 units or more in regular sessions is considered to be full-time status; enrollment in eight units is considered to be half-time status. Summer session enrollment in eight units is considered to be full-time status.

Cancellation/Withdrawal

Students who pay fees for a regular academic quarter and then decide to withdraw from the University must submit a Cancellation/Withdrawal form, together with their identification card for the current quarter, to the Registrar's Office after obtaining the signatures of their academic dean and, for undergraduate students, the University Ombudsman. Medical students must submit the form to the Curricular Affairs Office in the College of Medicine. 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 used in determining the percentage of fees to be refunded is the date on which the student submits the withdrawal form to the Registrar's Office or to the Curricular Affairs Office.

A W notation 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 notation under 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 Cancellation/Withdrawal form and an application for a Leave of Absence. Further information about leaves of absence and cancellation/withdrawals appears in the Research and Graduate Studies section.

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.

Readmission: Undergraduate Students

Students are strongly urged to consider the policy below 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.

Readmission is not automatic. To apply for readmission, a student must first pay a nonrefundable \$40 Application Fee at the Cashier's Office, and then file an Application for Readmission with the Registrar's Office at least *eight weeks* prior to the quarter in which readmission is desired. 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).

If a student has been academically disqualified from the University or has left the University while on probation or subject to disqualification, the student must apply for readmission in the manner prescribed above. The application, however, will be forwarded to the dean of the school which the student hopes to

enter. If the dean decides that the student is serious about academic life, and/or that the student has displayed capability at another academic institution, the student will most likely be allowed readmission to the University.

Transcripts for work taken at other institutions must be submitted as part of the application. A nonrefundable fee of \$40 is charged for each Application for Readmission. Remittance by bank draft or money order payable to Regents-UC must be attached to the application.

Readmission: Graduate Students

A graduate student who withdraws and has not been granted a leave of absence approved by the Dean of Graduate Studies can resume graduate study only if readmitted. The Application for Admission must be submitted by the published deadline for graduate admission applications. Please refer to the statement on readmission which appears in the Research and Graduate Studies section.

Intercampus Visitor: Undergraduates Only

A currently registered UCI undergraduate student in good standing may apply for intercampus visitor status at another campus of the University for one quarter. Forms and instructions are available at the Registrar's Office.

California Residence

All inquiries with regard to the requirements for the establishment of California residence (including exceptions pertaining to minors, aliens, and dependents of military personnel stationed in California) should be directed to the Residence Deputy, Registrar's Office, 215 Administration Building, University of California, Irvine, CA 92717, (714) 856-6129 or the Office of the Legal Analyst—Residence Matters, 300 Lakeside Drive, 7th Floor, University of California, Oakland, CA 94612-3550. Please refer to the Fees section for information on the Nonresident Tuition Fee and California residence.

Commencement

UCI Commencement ceremonies are held each June for all students who graduate any quarter of that academic year. Commencement protocol information is mailed to all prospective graduates in late spring and also is available in the office of each academic unit's academic counselor. Additional information is available from the Public Ceremonies Coordinator in the Arts, Lectures, and Student Affairs Communications Office; telephone (714) 856-6379.

Application for Graduation. In order to receive a degree, an undergraduate student should file an Application for Graduation at the appropriate counseling office. Refer to the section on Requirements for a Bachelor's Degree for more information.

Diplomas. Students are advised by mail when their diplomas are available, which is about four months after the quarter in which the degrees are awarded. Students may then 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. There is a service charge of \$5 for certified mail, \$10 for registered air mail, payable to Regents-UC. 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.

Orientation, Major Campus Publications, and Supplementary Educational Programs

Orientation

Orientation programs include Welcome Week, held in the fall; the Student-Parent Orientation Program (SPOP), a live-in experience on campus for new students and their parents; and Uni-Prep, a five-day, intensive program in September to help new students develop increased social and intellectual skills. All of these programs are sponsored by the Student Support Services Office, 209 Administration Building; telephone (714) 856-7759.

Welcome Week offers academic and social activities for new and returning students and is scheduled the week prior to the beginning of fall quarter classes. Students who enroll later in the academic year (winter or spring quarter) participate in an abbreviated orientation prior to the beginning of the appropriate quarter.

Student-Parent Orientation Programs (SPOP) are held three different times during the summer. SPOP is designed to help new students with their registration materials and offers informative sessions on academic programs, extracurricular activities, housing choices, and much more. Participants and their parents live in residence halls for the program. There is a fee for the program that covers room, board, and program costs. Applicants for admission who plan to enroll at UCI in fall quarter will be sent information about SPOP in the spring.

Uni-Prep is a five-day program for entering students held in early September. Participants live in the residence halls and attend workshops and other activities designed to provide them with information about shaping their academic and personal lives at UCI. A fee is charged that covers room, board, and program costs. Applicants for admission who plan to enroll at UCI in fall quarter will be sent information about Uni-Prep in the spring.

Major Campus Publications

Several major publications available on campus provide information about academic programs, student activities and services, enrollment in classes, and specifics pertaining to the individual departments and schools. Some of these publications are described here; others are listed in the *UCI Student Handbook* published each fall.

The UCI General Catalogue

The *UCI General Catalogue* contains general administrative and academic information, as well as specific descriptions of schools and departments and the courses they offer, degree requirements, major requirements, the UCI breadth requirement, and various academic policies and procedures (see How to Use the Catalogue). The *Catalogue* is published in mid-July. (See the Appendix for information on purchasing copies.) Because the *Catalogue* is prepared well in advance of each academic year, some information in it may not be current. Current information on specific courses offered is available in the *Schedule of Classes* and in quarterly information published by various academic units.

Schedule of Classes

The *Schedule of Classes* contains current information on fees, how to enroll in classes, and final examination schedules. Most importantly, it lists all classes to be offered each quarter and the time, room, and instructor scheduled for each. If there are any

enrollment restrictions on the class, such as consent of instructor required, these are noted. Just prior to the first day of instruction for each quarter, the Registrar's Office issues an addendum to the *Schedule* that lists added and canceled classes; changes in time, instructor, or classroom assignments; and other information.

Because the *Schedule* is published several times each academic year, it is a timely source of information on new policies and procedures, or changes in fees or procedures, that could not be included in the *Catalogue* because of the latter's less frequent publication schedule.

Except for the fall edition, the *Schedule of Classes* is published just before the beginning of each quarter; the fall *Schedule* is available in mid-spring for the convenience of students already attending UCI who will be continuing at UCI in the fall. The *Schedule* is distributed to new and continuing students when Registration Packets are distributed and also is available for purchase from the University Bookstore for 30¢.

Departmental and School Announcements

Publications by schools and academic departments contain information regarding a wide assortment of academic information of immediate, timely interest to students, and all students are strongly urged to read them. The publications come in various forms, from brochures of several pages to one-sheet photocopied announcements, and contain information specific to the individual academic unit. These publications usually are posted on departmental bulletin boards, are available in academic counselors' offices, or can be obtained from departmental offices.

Policies Applying to Campus Activities, Organizations, and Students, Part A

This booklet, available in the Office of the Dean of Students and the Student Activities Office, contains policies and procedures which govern aspects of student conduct and discipline; campus organizations; the use of University facilities; and time, place, and manner of public expression for which the University is required to implement campus regulations.

UCI Student Handbook

The *UCI Student Handbook* is published in the fall and is available (at no cost) while supplies last. A handy resource guide to UCI, it contains a broad spectrum of information for students, ranging from how to obtain a leave of absence to jobs to suggestions for amusement or involvement.

Student-Produced Media

The *New University* is a weekly campus newspaper published by UCI students. Other student-produced media include *East-West Ties*, *The Phoenix*, *La Voz Metiza*, *The Womyn's Quarterly*, the *Generic Alternative*, and *Umoja*. In addition, UCI students operate a radio station, KUCI (88.9FM).

UCI Journal

The *UCI Journal* is published quarterly by the University Advancement Office and the UCI Alumni Association. The *Journal* contains feature stories, commentaries, and other timely reports on UCI research, events, student life, educational policy, and alumni activities as well as a calendar of on-campus events. With a circulation of 80,000, the *Journal* is the only UCI general-interest publication that serves members of the UCI community both on and off campus. Copies may be obtained by mail or from media distribution boxes on campus. Further information is available from the Communications Office; telephone (714) 856-6922.

UCItems

UCItems is the campus newsletter and events calendar published monthly during the academic year by the University Advancement Office. *UCItems* reports on University and campus policies, accomplishments, and activities as they relate to faculty, students, and staff. Copies are available in media distribution boxes in the Administration Building, Library, classroom buildings, residence halls, and cafeterias. Further information is available from the Communications Office; telephone (714) 856-6924.

Publications Concerning Campus Services and Activities

Many campus offices that provide services or activities have brochures available describing what they offer. Publications include, but are not limited to, those about available student services such as career planning, health care, housing, and counseling; *UCI Presents*, the announcement of arts and lectures events; *Outdoors*, the Cooperative Outdoor Program's periodical; and *CR*, the Campus Recreation quarterly announcement.

Supplementary Educational Programs

Summer Session

Several summer sessions are held on the Irvine campus. Session I is scheduled from June 22 through July 28, 1992. Session II is from July 29 through September 3, 1992. An overlapping 10-week session extends from June 22 through August 28, 1992. Those who enroll in these sessions and take an academic program equivalent to a regular quarter may accelerate their progress toward a degree.

A wide variety of courses from the regular session is planned, supplemented by experimental offerings available only during the summer. Admission is open to all university students, to high school graduates, to qualified applicants over 18 years of age, and to 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. Fees for summer session are the same for out-of-State students as for California students.

In addition to the regular curriculum, Summer Session also coordinates a summer program for University of California students at Pembroke College in Cambridge, England. Offering a diverse number of course topics, most of which are reflective of the English life-style and culture, the program provides students with a sampling of collegiate life abroad.

Information regarding summer session is available from the Summer Session Office in the University Extension Building; telephone (714) 856-5493. Application forms and course listings are available in March.

University Extension

University Extension is the unit through which UCI serves the continuing education needs of adults. Extension provides advanced learning opportunities through more than 1,400 credit and noncredit courses, certificate programs, seminars, workshops, conferences, and lecture programs annually.

Courses are offered in a wide range of fields. Certificate programs, aimed at providing in-depth expertise in selected areas, are complemented by a number of general interest topics designed to promote self-improvement and career improvement. These include microcomputer engineering, hazardous materials management, interior design, legal assistantship, landscape architecture, construction management, real estate, contract management,

alcohol and drug counseling, human resources management, marketing communications, advertising, public relations, and a number of State-approved credential programs for educators.

Most of these courses are held in the evenings and on weekends to accommodate the working professional. They are conducted either at UCI or at remote sites throughout Orange County. In addition, University Extension is actively involved in developing customized in-house programs to meet the specialized needs of business organizations on a broad spectrum of subjects and topics.

University Extension also provides a means by which community members who are not officially matriculated UCI students may pursue academic interests by participating in regular UCI courses. This method, called concurrent enrollment, is available on a space-available basis with the approval of the course instructor. Applicants for concurrent enrollment must register through the University Extension Registration Office.

Several outreach programs further expand the role of University Extension. The Women's Opportunities Center provides resources and support throughout Orange County for women who are in need of educational, vocational, and personal guidance. The Honors Outreach Program includes the UCI Academic Talent Search, the UCI Pre-College program, and other special programs designed to assist highly able and academically advanced youth.

A free catalogue may be obtained from the University Extension Office, telephone (714) 856-5414.

University Extension Program in English as a Second Language

The program in English as a Second Language (ESL), sponsored by University Extension, prepares international students to enter and pursue their educational objectives in U.S. colleges and universities. An intensive program in English for academic purposes, it offers core courses in grammar, writing, reading and vocabulary development, seminar reporting and discussion strategies, listening, note-taking, debate and public speaking, and writing the research paper. A variety of elective courses such as TOEFL and GMAT preparation, American history, business and computer English also are available. Requests for information should be addressed to the Program in English as a Second Language, University of California Extension, P.O. Box 6050, Irvine, CA 92716-6050; telephone (714) 856-5991.

Another ESL program is available to students who have been admitted to UCI. Refer to the section on Admission of International Students.

ROTC

Although actual ROTC courses are not taught on the Irvine campus, a cross-town agreement allows qualified UCI students to participate in the Air Force Reserve Officers Training Corps (AFROTC), Army Reserve Officer Training Corps (AROTC), or Navy/Marine Corps Officer Training (NROTC) program. A brief descriptive pamphlet summarizing the programs is available from the Office of Admissions, 245 Administration Building.

Air Force ROTC

Through arrangements with California State University, Long Beach; Loyola Marymount University; the University of California, Los Angeles (UCLA); and the University of Southern California, two- through four-year Air Force Reserve Officers Training Corps (AFROTC) programs are available to all qualified UC Irvine students. Academic units earned in this program are counted as elective units toward fulfillment of UCI graduation requirements. Successful completion of the AFROTC program leads to a commission as an officer in the Air Force. Two-, 2½-, 3-, and 3½-

year Air Force scholarships are available to qualified students on a competitive basis. Four-year scholarships for incoming students must be applied for before December 1 in the year prior to entering college. All scholarship recipients receive full tuition (UC Educational and Registration Fees), required fees, and a stipend of \$100 per month. Students on scholarship in the first two years of the program must successfully complete a course in English composition and a course in mathematical reasoning within two academic years from scholarship activation. Students who accept a scholarship must agree to successfully complete at least two terms of college instruction in a major Indo-European language or Latin prior to commissioning.

Army ROTC

Through arrangements with the Department of Military Science at California State University, Long Beach and The Claremont Colleges Extension office at California State University, Fullerton, two- and four-year Army Reserve Officer Training Corps (AROTC) programs are available to all qualified UCI students. Academic units earned in the program are counted as elective units toward fulfillment of UCI graduation requirements. Successful completion of the AROTC program leads to a commission as a Second Lieutenant in the U.S. Army (Active, Reserve, or National Guard). Three- and four-year competitive scholarships which provide tuition and fee payments at UCI, payment for books, and a stipend of \$100 per month are available to qualified participants. Qualified students currently serving in any Reserve or National Guard unit may transfer to the AROTC program to complete their commissioning requirements. More information is available from the Department of Military Science, California State University, Long Beach, 1250 Bellflower Boulevard, Long Beach, CA 90840; telephone (213) 985-5766.

Center for International Education

The Center for International Education includes the Education Abroad Program and International Opportunities Program. The Center is a comprehensive resource and counseling center which helps students take advantage of the many worldwide opportunities that exist for study, work, internship, volunteering, and research. Participating in an international educational experience typically introduces students to ways of thinking different from their own, broadens their understanding of the historical and contemporary world, sharpens their interest in particular fields, and enhances their overall intellectual development.

The Center is located in 1010 Student Services II; telephone (714) 856-6343.

Education Abroad Program

The Education Abroad Program (EAP) of the University of California offers upper-division 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 more than 93 host universities and colleges in 33 countries throughout the world. One quarter's participation in EAP fulfills the International/Global breadth requirement.

Admission of University of California undergraduate students is subject to the following qualifications: a minimum 3.0 cumulative grade point average at the time of application; junior standing by departure (except for specific short-term programs); completion of language courses as required, with an overall minimum grade point average of 3.0 or the equivalent; and the recommendation of the campus EAP Selection Committee. Prior language study is recommended for participants in several programs and is required for certain other programs.

Students interested in the language, literature, art, culture, history, government, or social institutions of the countries where EAP study centers are located have the opportunity to gain substantial-

ly from first-hand academic experience. Classes in the natural and physical sciences, engineering, and in computer science are available at selected host institutions. In addition, whatever their field of study, EAP participants can broaden their outlook and gain new skills as the result of study in a foreign country. Study abroad allows students to experience vastly different cultures and contrasting patterns of thinking while making progress toward a UC degree.

The cost of studying abroad through EAP is comparable to the cost of studying at UCI. EAP participants are responsible for UC registration and educational fees, campus fees, and room, board, books, and personal expenses. The only additional costs directly related to the Program are for round-trip transportation and vacation travel, and personal expenses beyond what normally would be spent at home. Most University of California financial aid, including grants, scholarships, and loans, is available to EAP students who qualify. Most EAP participants going to Pacific-region countries receive UC Pacific Rim scholarships. Also, special grants are available for minority and economically disadvantaged students.

Normally, students participate in EAP during their junior year, so application for EAP usually is made in the sophomore year. However, students may apply for participation as fourth- or fifth-year seniors or as second-year graduate students. Students interested in EAP should contact the EAP Office early in the fall quarter concerning application deadlines.

An informative brochure and application forms for EAP are available from the Center for International Studies Office; 1010 Student Services II; telephone (714) 856-6343.

Academic Program. Generally, EAP students attend courses taught by faculty of the host university in the language of the host country; thus, language skills are very important. The academic program includes (1) an intensive course in the language of the host country, if applicable (this does not apply to programs in the United Kingdom, Ireland, Australia, New Zealand, or Canada in which English is the language of instruction); (2) a full year of academic courses (although a few shorter programs are available); and (3) opportunity to audit courses within the host university. Students may go to Denmark, Norway, Sweden, Israel, Hong Kong, Korea, Thailand, Indonesia, Hungary, India, Kenya, Egypt, or Taiwan with no prior knowledge of these countries' languages. However, for countries where the language of instruction is not English, students must spend the summer in intensive language programs which prepare them in the language for the academic year. Students are expected to complete a minimum of 36 units during the academic year in addition to units earned in the intensive language program.

Although units and grade points earned through the EAP are incorporated into the participant's University transcript and grade point average, the academic unit in which the participant's major is offered determines which EAP courses will be accepted in satisfaction of requirements for the specific major. A number of majors require that certain key upper-division courses be completed in residence at UCI.

EAP participants who satisfy all degree requirements while abroad and who expect to graduate upon completion of their year abroad should file for candidacy to receive their degree in September because, unfortunately, grades from abroad take time to reach the home campus and are not received in time for EAP returnees to be included on the June degree list. Such returnees, however, may participate in June Commencement.

Study Centers. The courses and fields of study open to EAP participants vary at each center, and some vary from quarter to

quarter. Each of the host universities has special areas of excellence and strength. Detailed information about each host university is available in descriptive brochures for each country. Brochures are available from advisors in the EAP Office.

EUROPE

Austria. A six-week compulsory intensive language program held in Strobl and Vienna precedes the beginning of the academic year. All courses are taught in German.

University of Vienna: The program focuses on Eastern European studies (e.g., economics, political economy, history, philosophy, architecture), fine arts (history of art, music, performing arts), folklore, and history.

Denmark. A compulsory summer intensive language program precedes the academic year and continues through the fall semester. Instruction is in Danish, although examinations in English may be available. Most students take courses in their major or a closely related field.

University of Copenhagen: There is a broad availability of humanities and social science courses. Strong programs in communications, economics, international politics, history, linguistics, and medieval studies are offered.

France. A compulsory intensive language program precedes the beginning of the academic year. All courses in the universities are taught in French. Customarily, tutorials accompany certain courses in which several UC students are enrolled. UC faculty directors are in residence at Bordeaux, Grenoble, and Paris.

University of Bordeaux: A wide range of humanities and social sciences is offered. Physics and mathematics also are available. The Institute of Political Sciences and the Institute of Pre-History (Anthropology) are well known.

University of Grenoble: A wide range of social sciences and humanities is offered through the Université des Sciences Sociales (Grenoble II). Some mathematics and sciences are available. Offerings in anthropology, philosophy, religious studies, and geology are severely limited.

University of Lyon: The program is strong in political science, Third World studies, and international relations. A wide range of humanities and social science is offered. Mathematics is limited, but science is available.

Paris Center for Critical Studies: Film theory, literary criticism, philosophy, theater (literature, criticism, and history), historiography, and limited art history are available.

Pau-Paris: Participants spend the first semester at the University of Pau and then take core courses at the Paris Center for Critical Studies during the second semester. The joint Pau-Paris program explores the development of French civilization, with the regional point of view offered at the University of Pau and the national perspective presented at the Paris Center for Critical Studies. Comparative cultural studies, French language, and critical studies are emphasized.

University of Pau: In this year-long program the first semester consists of courses offered through the joint Pau-Paris program. Students pursue their own interests in the regular course offerings the second semester. A scholarship accompanies this program, with preference given to students of Basque or Bernais background.

University of Poitiers: The program is strong in humanities, with major emphasis in history and medieval studies. Art history, literature, language, political science, mathematics, and physics also are available.

Germany. A compulsory intensive language program precedes the beginning of the academic year. All courses are taught in German. Tutorials supplement courses in which several UC students are enrolled.

Georg-August University (Göttingen): There is a broad curriculum covering most majors. Excellent science programs, with substantial strength in biology, chemistry, physics, and mathematics are offered. Space in laboratory courses in biology and psychology may be limited. Science majors may be restricted to theory courses.

Hungary. The program offers a fall semester program and a year-long program at *Budapest University of Economic Sciences*. Instruction is in English and includes courses in Central European history, culture, economics, and economic history. One course in conversational Hungarian is required.

Italy. A compulsory intensive program in Italian and contemporary Italian history at the University of Padua precedes the beginning of the academic year. Students who have completed only one year of Italian are eligible for participation in the EAP in Italy but, if selected, they must complete the equivalent of the second year prior to the start of the language program in Padua by attending the "pre" Intensive Language Program offered during the summer in Italy. All courses are taught in Italian.

University of Bologna: Special academic strengths for UC students are in the humanities and social sciences.

University of Padua: The academic program consists mainly of regular university courses. Most UC students study in the humanities and social sciences. For courses in art, history, and literature, supplemental support courses are offered.

University of Venice: Humanities and social science courses are available. Faculties of business, economics, literature, and industrial chemistry are renowned.

Accademia delle Belle Arti di Venezia (Venice): Art studio and some art history courses are offered. Students must submit color slides of their artistic portfolios for admission.

Bisonte International School of Graphic Arts (Florence): The program offers etching and lithography courses for advanced undergraduates. Students must submit color slides of their etchings portfolios for admission.

Conservatorio di Musica C.B. Martini (Bologna): The program offers individual instruction in music performance, composition, and music history. An audition is required for admission.

Norway. Knowledge of Norwegian is not required, but a compulsory intensive course in Norwegian (mid-June to mid-August) precedes the beginning of the academic year. Intensive language study is continued during the fall semester. All courses are taught in Norwegian although it may be possible to take examinations and to write papers in English. Tutorials can be arranged to supplement some courses.

University of Bergen: Courses in the humanities, social sciences, natural sciences, and mathematics are available, but space in the science courses may be limited. Ecology is particularly strong. Students usually study a single subject, usually in their major or a closely allied field, for the entire year.

Portugal. The academic year begins with a six-week intensive program in Portuguese at the Portuguese Language Institute at UC Santa Barbara.

University of Lisbon: Students may take language and liberal arts classes designed for foreigners, as well as offerings within the regular university system. All courses are taught in Portuguese.

Spain. A compulsory intensive language program precedes the beginning of the academic year. All instruction is in Spanish.

University of Alcala de Henares: Students attend regular university courses. Of particular interest to UC students are courses in economics, history, and literature.

University of Barcelona: Students take regular university courses as well as courses in the humanities especially arranged for EAP students. Course work offered includes Catalan studies, Spanish syntax, phonetics, composition, anthropology, literature, history, art history, and music. (This is a cooperative program with the University of Illinois.)

University of Madrid: Humanities and some social sciences courses are available. The core program, developed for the UC Study Center and other American programs, concentrates on Spanish studies in the broadest sense. Core and study center courses are taught by Spanish faculty. In addition, students must take at least one regular university course.

Sweden. Prior knowledge of Swedish is not required but a compulsory intensive language program precedes the beginning of the academic year. Language study continues during the fall semester for all students until they can pass the National Swedish Proficiency Test. Most courses are taught in Swedish; a few in English may be available. Arrangements can be made to take examinations in English.

University of Lund: Broad humanities and social science curricula are offered. Science courses are excellent.

United Kingdom and Ireland. The program, which includes 14 universities, is administered by a director and associate director in London. Once participants are selected by the EAP administration they must still be accepted by a specific department in one of the host universities. In many host universities, the student can pursue studies in that department only. Generally, the host universities offer a broad curriculum that includes most liberal arts majors. Courses in life sciences and physical sciences are available. The following universities participate:

England. *University of Birmingham, University of East Anglia (Norwich), University of Exeter, University of Hull, University of Kent at Canterbury, University of Lancaster, University of Leeds, University of Sheffield, University of Sussex (Brighton), and University of York.*

Ireland. *University College (Cork) and University College (Galway).*

Scotland. *University of St. Andrews and University of Stirling.*

Wales. *University College of Wales (Aberystwyth)*

U.S.S.R.

One semester programs are available for students who have completed two, three, or more years of Russian language.

Alexander Herzen Leningrad State Pedagogical Institute: Course work for students who have completed two years of Russian language consists of language study including phonetics, syntax, composition, conversation, literature, and translation. Lectures on contemporary Soviet life also are included. Advanced students may study in fields other than language.

Council on International Educational Exchange (CIEE) Program at Leningrad State University: Students who have completed three or more years Russian language can study for one semester or one year. Course work for the semester program is comparable to that described above for students who have completed two years of language. Year-long participants take two courses in their major and advanced Russian language.

MIDDLE EAST

Egypt. All courses except those in Arabic language and literature are taught in English.

The American University (Cairo): A broad curriculum is offered. All participants must take at least one course in Arabic during the year.

Israel. First priority for participation is given to students who have completed at least one year of Hebrew. A compulsory language course precedes the beginning of the academic year.

Hebrew University, Rothberg School for Overseas Students (Jerusalem): A broad curriculum is offered, with emphasis on studies of Israel and the Middle East. Students enroll in a special English-language program for foreign students which offers courses in Judaic, Israeli, and Middle Eastern studies, and a few courses in the general social sciences and humanities. Students with adequate command of Hebrew have access to a broader curriculum throughout Hebrew University.

ASIA

Hong Kong. Although knowledge of a Chinese language is not required for participation, all students are required to complete at least two courses in Chinese culture, history, or language prior to departure. A compulsory intensive Cantonese program precedes the beginning of the academic year. All students are required to study Mandarin or Cantonese language during the program. A limited selection of courses is offered in English.

Chinese University of Hong Kong: A broad selection of humanities and social sciences courses emphasizing Chinese studies is available. Art studio and music performance courses are also possible. English language courses are available but are announced only one week before instruction begins.

India. Instruction is in English. A compulsory intensive language program in conversational Hindi precedes the academic year. Students take a year-long core program focusing on modern India and Indian culture and tradition, and continue their study of Hindi. During the second and third quarters, students also take regular course work at the University of Delhi.

University of Delhi: Humanities and social sciences courses are well represented; some courses in the arts and mathematics are offered.

Indonesia. Three programs are available. No prior language study is required.

Summer Intensive Language Program: The program includes eight weeks of intensive language study at Gadjah Mada University in Yogyakarta.

Summer plus Fall Semester: The program includes the Summer Intensive Language Program followed by courses in Indonesian language and contemporary Indonesian history and society at the Institute of Teacher Training and Education in Malang. The program ends in November.

Academic Year Program: The program includes the summer and fall semester programs as described above. During the second semester students enroll in courses of their choice at one of the following universities. Courses will be regular university classes taught in Indonesian. Tutorial assistance may be available.

Gadjah Mada University (Yogyakarta): Agriculture, anthropology, biology, economics, geography, mathematics, philosophy, psychology, and political science courses are offered.

University of Padjadjaran (Bandung): Development studies, environmental/ecology studies, humanities, and social sciences courses are available.

Indonesian Arts Institute (Yogyakarta): Music, dance, theatre, and fine arts courses are available.

Advanced School of the Arts (Denpasar) and The Indonesian Dance Institute (Bandung): Dance, music, theatre, and ethnomusicology courses are offered.

Institute of Teacher Training and Education: Courses in education, natural science, social science, fine arts, and engineering are available.

Japan. There are several EAP opportunities available in Japan. All academic-year students attend an orientation and intensive language program before the academic year begins in Japan.

International Christian University (Tokyo): One year of Japanese language study is required. The university has divisions of education, humanities, languages, natural sciences, and social sciences. Particular strengths are in language study and Japanese literature. The language of instruction is primarily Japanese, although there are a limited number of courses taught in English.

Sophia University (Tokyo): One year of Japanese language study is required. Students are enrolled in the faculty of comparative culture where the language of instruction is English. All students study the Japanese language. Courses in anthropology, art history, business, economics, history, Japanese studies, literature, philosophy, political science, religion, and sociology are taught in English. Students with advanced Japanese can take courses at the main campus where the language of instruction is Japanese.

Doshisha University (Kyoto): Two years of Japanese language study is required. The language of instruction is Japanese, but examinations can be taken in English. Course work in economics, engineering, law, letters, theology, and commerce is offered.

Osaka University: One year of Japanese language study is required. The language of instruction is English. A specialized program with a fixed curriculum in economics and Japanese language study is offered.

Inter-University Center (Yokohama): Two years of Japanese language study is required. This specialized program of intensive Japanese for advanced speakers is offered as part of a consortium program administered by Stanford University.

Meiji Gakuin Peace Studies Program (Yokohama): This is a spring quarter program for students interested in, and having a background in, peace and conflict studies. The program includes courses and excursions. There is no language requirement. Instruction is in English.

Tohoku University (Sendai): Two years of Japanese are required. Graduate students with advance Japanese can pursue courses in Japanese studies or related fields.

Tokyo Institute of Technology: Graduate students may do research and take courses in science and engineering. Participants' academic programs are determined according to Japanese language proficiency. Fellowships are available.

Kyushu Institute of Technology (Kitakyushu).

Kyushu University (Fukuoka): Language studies and a graduate-level program in economics are available.

Nagoya University: A graduate-level program in economics is available.

Tokyo University.

Korea. Both a one-semester and a one-year option are available. A compulsory intensive language course precedes both options.

Yonsei University (Seoul): The academic program includes language study and courses taught in English in the humanities and social sciences. Students proficient in Korean may enroll in regular university courses.

People's Republic of China

Peking University (Beijing): This academic-year program requires two years of university-level Mandarin Chinese language study as a prerequisite. Students take classes in language and literature designed for foreigners and may also take regular university courses in economics, history, Chinese, and literature. All classes are taught in Mandarin Chinese.

Nanjing University: This language and area studies program is coordinated through the Council of International Educational Exchange. Students may apply for either a fall or spring semester program. A minimum of one year of Chinese language study is required.

Nakai University (Tianjin): This is a one-semester program. One year of previous Mandarin Chinese language study is required. An intensive language program in Mandarin precedes the semester. Courses taught in English on Chinese culture and civilization are offered.

Taiwan, Republic of China

National Chengchi University (Taipei): No prior study of Chinese is required. Students choose between three course tracks: (1) Chinese art and art history; (2) Chinese language and culture; or (3) international business. Classes are taught in English. This is a cooperative program with California State University International Programs.

Thailand. Three programs are offered. No prior language study is required.

Chiang Mai University: Summer Session — an eight-week program covering Thai language, history, and civilization. As an integral part of the program students live with a Thai family. Fall Semester — the program begins with the summer session. Students then continue their language study and take a course entitled "Thailand in Southeast Asia" which is conducted in English.

Academic Year Program at Chiang Mai University or Chulalongkorn University (Bangkok): The program begins with the summer session and fall semester as described above. During the second semester students continue language study and either do independent study or take regular University courses in Thai literature, history, religious art, Buddhism, Marxist thought, and Chiang Mai architecture.

AFRICA

Ghana. Students participating in this program must have serious motivation and capacity for independent study and research. There is no language requirement. Courses are taught in English.

University of Ghana (Accra): The areas of history and African studies (music, drama, and literature) are especially strong, but students may also pursue research in ethnomusicology, geography, language, religious studies, sociology, archeology, political science, history, and natural sciences.

Togo. The program offered is an eight-week summer study and field experience. It includes intensive French language study, a course on contemporary Africa (in English), and an independent study project. One year of French language study is required. Freshmen and above may apply.

Kenya. As in the British system, students take a year-long program of study in their major area of specialization. Examinations are given once, at the end of the academic year, and are mandatory for receiving credit. There is no language requirement. Courses are taught in English.

University of Nairobi: Strengths of the University are the humanities, physical and biological science, social science, African studies, development studies, and environmental studies.

LATIN AMERICA

Brazil. Language requirements for admission to this program are (a) two years of university-level Portuguese language study or the equivalent, (b) one year of university-level Spanish language study and one-year of university-level Portuguese language study, or (c) two years of university-level Spanish language study and completion of an intensive course in Portuguese language study prior to departure. A compulsory intensive language program precedes the beginning of the academic year.

University of São Paulo: Brazilian literature, Portuguese language, arts, economics, humanities, and social sciences courses are available. (This is a cooperative program with the University of Indiana.)

Costa Rica. Three different programs are offered.

Academic year at *University of Costa Rica (San José)*: Participants study for the academic year which is from March through December. Students take regular university courses in the humanities and social sciences, and at least half of their course work is related to Central America. All classes are taught in Spanish.

Medical Program, a seven-week program for fourth-year medical students in the winter quarter and first-year medical students in the summer are also offered. Includes language and community and family health clinical studies at the *University of Costa Rica*.

Tropical Biology Program at *Monteverde Institute*. This spring quarter program is offered to students who meet certain biology prerequisites to study tropical biology in the rain forest of Monteverde. Previous Spanish language study is preferred.

Mexico. Three programs are offered.

Academic year at *Universidad Nacional Autonoma de Mexico (UNAM), Mexico City*: Students have the option of spending one semester (two UC quarters) or a full year at UNAM. A compulsory intensive language program precedes the beginning of the academic year, augmented by courses in contemporary Mexico (history, art, literature). A wide variety of social sciences and humanities courses are available. All instruction is in Spanish. A month-long volunteer work field placement in a community outside of Mexico City is an integral part of this program.

Study and Field Experience: The program is available in either the fall or spring quarter and begins in Mexico City with six weeks of intensive language courses and a course on contemporary Mexico. The final weeks of the program are spent doing volunteer work in a community outside of Mexico City to complement formal course work.

Language and Society quarter at *San Nicolas de Hidalgo University of Michoacan (Morelia)*: This summer quarter program provides total immersion in Mexican society and Spanish language instruction. Students must have completed one year of university-level Spanish language study before departure. Because instruction is at the second-year level the program is not appropriate for advanced students in Spanish.

Peru. A compulsory intensive language course precedes the beginning of the academic year. All courses are taught in Spanish.

Pontifica Universidad Catolica del Peru (Lima): Humanities, social sciences, anthropology, archaeology, and ethnohistory are subjects of special interest. (This is a program of the Peru Consortium, which is composed of the University of Indiana and a number of California universities.)

SOUTH PACIFIC

In the Southern Hemisphere, the academic year extends from the beginning of instruction in early March through the examination period, which starts in November. UC participants leave in February and do not enroll in UC classes during the winter term preceding departure.

Australia. Students may study at one of nine universities: *Australian National University (Canberra)*, *Flinders University (Adelaide)*, *La Trobe University (Melbourne)*, *Monash University (Melbourne)*, *University of Adelaide*, *University of Melbourne*, *University of New South Wales (Sydney)*, *University of Sydney*, and *University of Wollongong*. Once participants are selected by the EAP administration they must still be accepted by a specific department in one of the host universities. In many host universities, the student can pursue studies in that department only. Generally, the host universities offer a broad curriculum that includes most

liberal arts majors. Courses in life sciences and physical sciences are available.

New Zealand. Students may study at one of five universities: *Lincoln College, Christchurch*; *Massey University, Palmerston North*; *University of Auckland*; *University of Otago, Dunedin*; and *Victoria University, Wellington*. Students may indicate a preference for the host university but final assignment is based on a student's academic field and space availability in a given department. Most academic disciplines can be accommodated.

NORTH AMERICA

Canada. The program consists of courses in the students' major or an allied field through the regular university system. Most disciplines can be accommodated. All instruction is in English.

University of British Columbia (Vancouver): The University is renowned for its teaching and research in forestry, biotechnology, microelectronics and lasers, international business, computer technology, and Pacific Rim studies.

International Opportunities Program

The International Opportunities Program (IOP) provides information and advice to students who are interested in international study, short-term employment, field research, volunteer work, internships, scholarships, or educational travel abroad. IOP differs from the University's Education Abroad Program (EAP) in that (1) IOP participants can stay abroad for shorter time periods (e.g., a summer, an academic quarter) as well as longer periods (for one academic year or longer); (2) it offers programs in countries in which EAP does not have study centers; and (3) the language, grade point average, and class standing requirements vary.

IOP helps students enroll directly in foreign institutions, participate in study-abroad programs sponsored by a variety of U.S. colleges and universities, or enroll directly in independent language schools. Students who go abroad through the IOP are eligible to earn *transferrable* credit from the sponsoring institution.

To acquaint students with opportunities abroad, IOP sponsors the yearly "International Opportunities Fair," and periodic seminars. It also maintains a library of international resources and governmental publications, as well as a data base to assist students in locating opportunities abroad.

IOP is located in 1010 Student Services II Building; telephone (714) 856-8657.

Education at Home Program

In winter quarter the University's Riverside campus will continue the Education at Home Program (EHP) for those students with special interest in early American history and culture. Those selected for participation in this program will spend nine weeks in Williamsburg, Virginia; one in Philadelphia; and a concluding week in Washington, D.C. The program is open to all undergraduates from all campuses in the University of California system. With the prior approval of their graduate advisor, graduate students also may apply. Participants register for three courses through the Riverside campus' Department of History (History 157, 158, 159). Special arrangements for additional independent study (maximum of four units) may be made with the student's home campus. Costs for housing, food, and transportation are the individual participant's responsibility. Further information, brochures, and applications are available from Susan Braddock, Education at Home Program Office; telephone (714) 787-3820. Preference is given to applications received by June 30.

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 given in the Research and Graduate Studies section.

Student Academic Records

Student's official academic records are maintained permanently by the Registrar and are used for purposes such as academic advising, scholarship awards, admission to professional or graduate schools, and future employment.

Each student is responsible for carefully examining their enrollment and academic records and may do so throughout the academic year. Students must promptly notify the Registrar's Office if they find a discrepancy in their records.

Since each student's current quarter class enrollment is put directly into the academic record system from telephone enrollment or source documents completed by the student, it is extremely important for each student to complete these entries or source documents (e.g., Add/Drop/Change cards) carefully and accurately.

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).

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
- 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 Committee on Course, for which the final quarter grade of a multiquarter sequence course is assigned to the previous quarter(s) of the sequence)
- NR — No Report (given when an instructor's final grade course report is not submitted or when the student's name was on the official class roster but the instructor did not report a grade for the student; 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, at the student's request, 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 repeated the course again.

W — Withdrew. A W notation 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 will be disregarded in determining the student's grade point average 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.

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, with the exception of certain programs in Engineering, 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/director/chair of the school/program. If the matter is not resolved, the student may go for counsel to the Office of the University Ombudsman. Under circumstances explained in the Academic Grievance Procedures (Manual of the Irvine Division of the Academic Senate, Appendix II), a grade may be changed if the Academic Grievance Panel has determined that the grade was assigned on the basis of discrimination.

Incomplete Grades

An I or Incomplete grade is assigned to a student by an instructor when the student's work is of passing quality but is incomplete because of circumstances beyond the student's control, and when the student has been temporarily excused by the instructor from completing the quarter's work.

For currently enrolled students, the maximum time limit for making up an I grade is three quarters of enrollment. After this time the I grade can no longer be replaced and will appear permanently on the record. *The instructor is not obligated to allow the maximum three-quarter period.* The student should consult 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 a time agreed upon by the instructor, the student should ask the instructor to submit a change of grade form to the counseling office of the school in which the course was offered. The student should *not* reenroll in the course to make up the Incomplete.

Students not currently enrolled at UCI have a maximum of one calendar year in which to replace an Incomplete grade. 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 one calendar year following the assignment of the Incomplete grade.

Courses graded I carry no grade points and are not included in computation of the grade point average which appears on the student's permanent record. Any I grade will remain indefinitely on the permanent record unless the work is completed and a grade assigned as described above.

University of California regulations require a grade point average of 2.0 for all units *attempted* in order to receive a bachelor's degree. *Only when a check for satisfaction of graduation requirements is made are I's treated as F's.* If the student's overall average is at least a 2.0, including the Incomplete grades computed as F's, then the student may graduate. If the Incomplete grades computed as F's decrease the student's average below a 2.0, the student may not graduate until enough I grades have been made up to bring the average up to a 2.0 and this must be done within the time limits specified above.

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.

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. However, candidates for the bachelor's degree may take a total of 12 more units in courses designated by academic units as Pass/Not Pass Only.
2. 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.
3. Courses taken under the Pass/Not Pass option may count toward the unit requirement for the bachelor's degree and toward the breadth 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.

4. Changes to or from the Pass/Not Pass option must 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.
5. 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, 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. With the approval of the Graduate Council, certain graduate courses are graded S/U Only. Also, 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. With the specific approval of the Graduate Council, other graduate courses may be graded on an S/U basis provided that each student enrolled in such a course receives a grade of S, U, or I (or if an undergraduate student, a grade of P or NP).

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.

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 Committee on Courses 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 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

Undergraduates may repeat courses only when grades of C-, D+, D, D-, F, or NP were received or when the course has been approved for repetition. (A C- earned before fall quarter, 1984, is not repeatable.) Degree 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.

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.

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.

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

Once a student matriculates to UCI, the student can take only UCI courses in satisfaction of the lower- and 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. The following applies to students who fail to attain a grade of C or better in the lower-division courses:

1. Students who fail to attain a grade of C in one or both courses of the English and Comparative Literature WR39B-C sequence must repeat the course or courses in question.
2. Students who fail to attain a C in at least two quarters of the writing component of the Humanities Core Course after satisfying the Subject A requirement should substitute English and Comparative Literature WR39C if they need one quarter of additional work to complete the requirement, or English and Comparative Literature WR39B-C if they need two quarters to complete the requirement.

The course taken to fulfill the upper-division writing requirement must be completed with a grade of C or better. The following applies to students who fail to attain a grade of C or better in the upper-division writing course:

Students who fail to attain a grade of C in English and Comparative Literature WR139W should repeat it. Students following any other approved upper-division writing option should enroll in English and Comparative Literature WR139W if a C is not attained in the selected course.

See UCI Requirements for further information.

Credit by Examination

An enrolled student may obtain credit for many courses 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 office of the

dean of the school which offers the course. Approval of any petition for credit by examination must be obtained from the dean 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 Fee 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

Another 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 are obligatory in all undergraduate courses except laboratory and studio courses, or their equivalent, as individually determined by the Committee on Courses. In laboratory and studio courses, the department concerned may at its option require a final examination subject to prior announcement in the *Schedule of Classes* for the term. Normally each such examination shall be conducted in writing and must be completed by all participants by the announced time shown in the *Schedule of Classes* for the quarter in question. These examinations may not exceed three hours duration. Special arrangements may be made for disabled students.

Final grade reports 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 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 (Subject A, American History, and American Institutions).

Undergraduate Scholarship Requirements

Requirements for a bachelor's degree, with the exception of certain programs in Engineering, 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 acquired, as follows:

Freshman	0	—	40.4
Sophomore	40.5	—	83.9
Junior	84.0	—	134.9
Senior	135.0	—	180.0

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 a student must obtain the authorization of the student's dean.

Refer to Part-time Study in the Index.

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 subject to disqualification from further registration in the University if they fail to make normal progress toward the baccalaureate degree.

1. 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	24–30	16–23	15
3	36–45	24–35	23
4	50–60	40–49	39
5	65–75	56–64	55
6	80–90	72–79	71
7	96–105	89–95	88
8	112–120	106–111	105
9	128–135	124–127	123
10	145–150	142–144	141
11	162–165	160–161	159
12	180	—	—

2. A student who at the end of a given quarter of enrollment has completed the number of units in the range specified in the "Normal Progress" category under (1) is making normal progress. A student who at the end of a given quarter of enrollment has completed a number of units in the range specified in the "Subject to Probation" category under (1) is subject to being placed on probation by the faculty of that student's school or program or its designated agent. A student who at the end of a given quarter of enrollment has completed no more than a number of units in the range specified in the "Subject to Disqualification" category under (1) is subject to disqualification by the faculty of that student's school or program or its designated agent.

3. 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 (1) are subject to disqualification.

A student will be allowed to continue on probation only if the record indicates likely achievement of the required scholastic standing within a reasonable time.

4. 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

5. Units earned under the following three circumstances are not to be counted toward determination of the quarter at entrance under (4) above: (a) Advanced Placement Examination; (b) concurrent enrollment in college courses while in high school.
6. 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.
7. 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. 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. Each school and program is obliged by Academic Senate regulations to maintain a procedure under which a student may appeal probation and 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 the Campuswide Honors Program and the major-specific honors programs available at UCI is found in the Planning an Undergraduate Program section.

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

Students may graduate with honors, summa cum laude, magna cum laude, or 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.

Graduate Scholarship Requirements

For a graduate student, only the grades A+, A, A-, B+, B, and S represent satisfactory scholarship. Information concerning graduate student course load requirements and satisfactory academic progress is given in the Research and Graduate Studies section.

Enrollment in University Extension

If a UCI student wishes to enroll in a University 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 (in the case of graduate students, by the Dean of Graduate Studies).

Credits From Other Institutions or University Extension: Undergraduate Students

UCI undergraduate students who wish to enroll in courses at another institution in either a summer or regular session and to use such courses to satisfy any UCI requirements should secure prior approval from the Office of Admissions and their academic dean. The Office of Admissions is responsible for determining if these credits are transferable to UCI, and the academic dean or director of the academic unit which offers the student's major is responsible for determining if the credits are applicable to major and breadth requirements.

If such courses are determined by the Office of Admissions to be transferable, and if such courses 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.

Forms for securing such authorization are available in the Office of Admissions and in deans' offices.

Credits From Other Institutions or University Extension: Graduate Students

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 initiate a formal petition after enrollment in graduate study. Approval of the student's graduate advisor and the Dean of Graduate Studies is required.

While enrolled at UCI or on a leave of absence, a graduate student may receive unit credit for graduate-level courses completed at another institution or through University Extension only with the prior approval of the student's graduate advisor and the Dean of Graduate Studies.

See the Research and Graduate Studies section for further information about graduate transfer credit and the University's Inter-campus Exchange Program.

Program of Academic Support Services

The Program of Academic Support Services (PASS) is a campuswide program designed to help students fulfill their potential and attain their academic goals at UCI. PASS offers a wide range of services and programs which are course-specific, discipline-specific, or general. Services are provided in a variety of formats, including workshops, laboratories, adjunct classes, small-group tutoring, and individual conferences. The Program's services supplement classroom instruction. Counseling and referral services for specific student groups also are provided.

Although most PASS programs are not offered for academic credit, they have been developed in coordination with academic departments. Presented in a coherent, educationally sound manner, these programs are intended to meet the individual needs of all UCI students. For example, programs are available to students who desire greater academic proficiency in courses ranging in level from introductory through honors and upper division. Students who desire assistance have the opportunity to find a PASS program that is suited to their needs and that will make their education at UCI more successful and rewarding.

Administered through the Office of the Dean of Undergraduate Studies, PASS programs and services are organized under four units: the Learning Skills Center, Student Academic Advancement Services, the Testing, Research, and Evaluation Office, and the Tutorial Assistance Program. All PASS units are located in the Student Services II Building.

The **Learning Skills Center** provides programs designed to help students strengthen and develop their reading, writing, mathematics, science, analytic thinking, and study skills in order to enrich and enhance their education at UCI. Some Learning Skills programs are neither discipline- nor course-specific, but stress the development of abilities that all students need regardless of field or major. Such programs include workshops and individual counseling in writing, time-management, overcoming procrastination, listening and note-taking, test-taking, and preparation for the graduate entrance examinations. Classes in critical reading also are offered.

The Center offers a program of course-related adjuncts in conjunction with designated introductory courses in writing, humanities, chemistry, mathematics, the biological sciences, and the social sciences. These adjuncts, coordinated with regular course instruction, provide an opportunity for students to improve their academic skills in specific courses.

Student Academic Advancement Services (SAAS) is responsible for counseling and referral services for specific student groups, the Engineering and Computer Science Educational Laboratory (ECSEL), the Summer Bridge, and for a graduate school preparation course. Additional information is available in the Student Affirmative Action section.

The **Testing, Research, and Evaluation Office** administers placement tests in chemistry, physics, precalculus, college algebra, reading, writing, and English as a second language (see Placement Testing). Test results provide students with information about their academic preparation before they enroll in classes and are used to determine placement in introductory courses.

The objective of the **Tutorial Assistance Program (TAP)** is to aid undergraduate students in comprehending and retaining course-specific subject matter and in developing the understanding necessary for successful independent learning. Through small-group tutorials, TAP activities are designed to encourage students confidence and to cultivate, by maximizing their participation,

their ability to work with and articulate aspects of the course. Tutoring is available in the following disciplines: the biological sciences, chemistry, computer science, engineering, the humanities, mathematics, physics, social ecology, and the social sciences. TAP also offers a review program for the physical and biological sciences sections of the Medical Colleges Admission Test.

The **PASS Writing Workshops** seek to provide in-depth writing assistance of a focused and methodical nature to students who may find English and Comparative Literature WR39A difficult because of insufficiencies in the University preparation. This assistance, furnished to newly admitted students, addresses specific compositional weaknesses and endeavors to provide students, at an early stage of their coursework, with necessary verbal skills. Assistance is given in the form of workshops attached to special sections of English and Comparative Literature WR39A. The Writing Workshops enable instructors to give intensive and individualized attention to students.

Campus Life and Student Activities

Arts and Lectures

Each year the Arts, Lectures, and Student Affairs Communications Office brings guest performing artists and lecturers to the campus. Such cultural programs are designed to complement the classroom experience of students, provide programs of interest to the public, and stimulate community interaction through cultural, social, and political discussion. During the 1990-91 academic year, lecturers included authors Nien Cheng and Dean Koontz, Mark Russell, and a debate between William F. Buckley and George McGovern. Cultural programs featuring performing artists included performances by the New Zealand Ballet, the Shanghai Acrobats and Imperial Warriors of the Peking Opera, and the Alvin Ailey American Dance Theater. Program information is available from the Office; telephone (714) 856-6379.

Other services of the Office include the Student Speakers Forum, the University Speakers Bureau, the UCI Film Society, and the UCI Entertainment Registry. The Student Speakers Forum is composed of student speakers who make presentations about their research, faculty-directed studies, creative activities, and student leadership experiences to community and civic organizations and schools. The University Speakers Bureau is composed of more than 200 faculty and staff who are available to speak about UCI's research and scholarly activities as part of the University's public service commitment to the community. Information about both groups is available from the Office; telephone (714) 856-7737. The Film Society presents films from the international collection on Friday evenings. The student committee selects films to illustrate their chosen theme; last year's series included films relating directors' personal stories and another collection entitled "Separate Realities." The UCI Entertainment Registry is comprised of talented students, staff, and faculty who are hired to perform. Information about the Film Society and the Registry is available from the Office; telephone (714) 856-5588.

Bren Events Center

The Bren Events Center is the largest facility on campus, seating 5,700 for concerts, lectures, convocations, theatre, and musical productions, and 5,000 for spectator sports such as basketball and volleyball. The majority of the funding for the payment of the Center's construction costs comes from a student-approved quarterly student fee. Both the Center and its two meeting rooms, the Stewart and Koll Rooms, are available to campus and off-campus users. Further information is available from the Bren Events Center Director; telephone (714) 856-5050. The Events Center Ticket Office, which handles ticket sales for most campus events

and is a Ticketron outlet, is open from 10 a.m. to 6 p.m. Monday through Friday; telephone (714) 856-5000.

Cross-Cultural Center

The Cross-Cultural Center offers a friendly atmosphere and supportive environment for the ethnic minority community at UCI. It provides office space and serves as "home base" for nearly 30 registered multicultural organizations. Center facilities include a conference room for group meetings, a lounge for socializing, a study room, and a graphics production area. In addition, the Center has a job board that lists educational and career opportunities and a resource library. The annual Rainbow Festival, a four-day program that recognizes and reinforces UCI's commitment to ethnic diversity, is one of the major programs administered by the Center. The Center also supports a variety of annual special events such as Black History Month, Asian Week, Cinco de Mayo, and the Cross-Cultural Center Holiday Feast. In addition, the Center sponsors a faculty-student mentorship program, a Faculty-in-Residence program, and a noon lecture series designed to support the educational, cultural, and leadership development of ethnic minority students. Additional information is available at the Center; telephone (714) 856-7215.

Intercollegiate Athletics and Campus Recreation

Intercollegiate Athletics

The Intercollegiate Athletic Program at UCI features 19 sports, with 11 men's teams, seven women's teams, and one coed sailing team. Men's sports include baseball, basketball, crew, cross country, golf, sailing, soccer, swimming, 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 10-school Big West Conference. The Anteater men's volleyball team competes in the Western Intercollegiate Volleyball Association (WIVA). UCI's sailing team competes in the Intercollegiate Yacht Racing Association (ICYRA), and crew competes in the Pacific Coast Championships. The UCI women are also in NCAA Division I and compete in basketball, cross country, swimming, tennis, track and field, and volleyball in the Big West Conference. Soccer is an independent sport.

UCI has captured 21 national team championships in eight different sports since opening in 1965, with more than 60 individuals winning national titles and nearly 400 earning All-American honors. UCI has won 33 Big West conference championships since 1977: 15 in cross country, nine in tennis, seven in water polo, and two in track and field.

Each spring, the University presents the Big West Scholar-Athlete Award to those student-athletes who maintained a minimum 3.2 GPA over the previous three quarters. As of 1990, 592 UCI student-athletes have earned the award.

Intercollegiate Athletics also features a UCI Hall of Fame, honoring former athletes, coaches, and administrators. Twenty-five Anteaters have received recognition by election to the Hall of Fame, which is located in the Bren Events Center.

The University is proud of the 17 outstanding UCI men and women who have participated in Olympic competition, and there are currently more than a dozen former Anteater athletes competing professionally throughout the world.

The Intercollegiate Athletic offices are located in Crawford Hall. Additional information is available from Intercollegiate Athletics and Campus Recreation; telephone (714) 856-6931.

Campus Recreation

The Campus Recreation program offers noncredit instruction, intramural activities, club sports, fitness, and informal recreation to all officially enrolled students, as well as faculty and staff.

Recreation instruction classes include aerobics, yoga, party dancing, ethnic dance, lifeguard training course, water safety instructor course, sailing, scuba, tennis, billiards, table tennis, jazz dance, ice skating, and adult swimming.

Intramural activities feature men's, women's, and co-rec team sports, and many individual and dual sports. Team sports include flag football, volleyball, basketball, softball, soccer, ultimate frisbee, and innertube water polo. A sampling of individual and dual sports includes badminton, board games, racquetball, table tennis, tennis, track and field, two-person volleyball, and wrestling. The emphasis is on participation, and activities are offered at all ability levels from novice to advanced.

The club sports aspect of the Campus Recreation Program provides students, faculty, and staff with an opportunity to participate in activities that fall beyond the scope of intramurals. Specialized instruction and extramural competition are the highlight of many club activities. Since clubs are student-initiated, offerings vary from year to year. Currently, active clubs include Aikido, Hwa Rang Do, Karate, Tai Chi/Kung Fu, Tang Soo Do, bike racing, fencing, hockey, lacrosse, rugby, sailing, ski racing, surfing, table tennis, tennis, water skiing, women's crew, women's softball, women's water polo, and wrestling.

Informal recreation provides the UCI community with an opportunity to utilize the facilities in and around Crawford Hall, the departmental sports complex, in a nonstructured setting. Activities which may be pursued on a drop-in basis include badminton, indoor and outdoor basketball, jogging/exercise, racquetball, swimming, tennis, volleyball, and weightlifting.

Additional information is available from the Campus Recreation Office, 1368 Crawford Hall; telephone (714) 856-5346.

Sports Facilities

On-campus facilities include the Bren Events Center, which seats 5,000 for intercollegiate basketball and volleyball events. Crawford Hall features activity areas for badminton, basketball, combatives, fencing, volleyball, and weight training. Baseball and track stadiums each seat 2,500. The UCI Tennis Stadium, which seats 500, features 12 courts, six of which are lighted. The campus also has outdoor basketball and volleyball courts (lighted); six indoor four-wall handball/racquetball/squash courts; a swimming pool; and vast recreational fields.

Off-campus facilities include a sailing and crew base in Newport Beach and access to nearby facilities for bowling, roller skating, ice skating, and equestrian use. City and State beaches on the Pacific Ocean are also within minutes of the campus.

Speech and Debate Team

The Speech and Debate Team offers students opportunities to compete with students from other universities and colleges in intercollegiate speech and debate tournaments. Other activities include public speaking, oral interpretation, and Readers Theatre presentations to campus and community audiences. Further information is available from the Director, Speech and Debate Team, telephone (714) 725-2663, or through the Student Activities Office, telephone (714) 856-5181.

Student Activities Office

The Student Activities Office, located in the UCI Student Center, provides advisement and support services for more than 240 registered campus organizations with a combined membership exceeding 14,000 students. These groups encompass a wide range of interests including academic, environmental, faculty/staff, multicultural, political, recreational, religious, service, social, and sports. Professional and student staff provide information on event planning, publicity, funding and fund-raising, alcohol and substance abuse, and campus regulations and policies.

UCI's Greek system includes 27 sororities and fraternities with more than 1,700 members. The Student Activities Office provides advisement for the governing councils, chapter officers, Greek honorary associations, and special Greek events. Major Greek programs include Rush (membership recruitment), New Member Education Conference, Greek Leadership Retreat, Faculty Recognition Dinner, Greek Songfest, Sorority Weekend, and Greek Award Night.

To aid students in becoming more effective leaders, the Student Activities Office offers a variety of programs and services. These include the All-University Leadership Conference, a weekend program for emerging and established student leaders; informal "how to" workshops addressing such topics as communication skills, time management, goal setting, and team building; University Affairs for Credit, a 1.3-unit course available to students who undertake a significant campus project intended to enrich their academic growth; and various publications and resources intended to assist students in their leadership roles.

The Student Activities Office also administers a host of other programs: Welcome Week Fair, Presidents' Dinner, College Bowl Tournament, Campus Organization Day, and Student Organization Recognition Night. Additional information about any of these programs is available from the Office; telephone (714) 856-5181.

The Cooperative Outdoor Program (COP), located in the Student Center, is another component of the Student Activities Office. The COP schedules approximately 100 outings, seminars, lectures, and demonstrations annually. These cover a wide range of activities including backpacking, hiking, canoeing, rock climbing, trail maintenance trips, habitat restoration efforts, and interpretive environmental education tours of local habitats such as the San Joaquin Freshwater Marsh, Crystal Cove State Park, and the Newport Back Bay Ecological Reserve. The Campus Cyclery, an adjunct to COP, provides the campus community with a complete bicycle maintenance service, wheelchair repair, and sells accessories and new bicycles. For information regarding services and business hours, telephone the Campus Cyclery at (714) 856-6212 or stop by the store. The Program also sponsors various credit and noncredit opportunities for those interested in environmental education topics and issues. These range from courses and independent research projects to seminars, lectures, and films.

Registered Campus Organizations

Academic Groups

Alpha Epsilon Delta Premedical Honor Society
Asian Students for Health
Asociacion de Estudiantes de Espanol y Portugues
Associates for Computing Machinery
Association of General Contractors
Association of Renaissance and Medieval Anteaters
Black Students in Science Organization
Black Students in Social Sciences Organization
Blimp Design Club
Campuswide Honors Program
Student Advisory Council
Chicanos for Creative Medicine
Chi Epsilon
Chinese Pre-Health Student Association
Economics Students Association
El Club e La Literatura Espanola
Engineering Students' Council
Environmental Psychology Students
Eta Kappa Nu
Golden Key National Honor Society
Graduate School of Management Ph.D. Student Association
Graduate School of Management Student Association
Humanities Council
Institute of Transportation Engineers
Korean Health Association
Math Club
Medspur
Mexican-American Engineering Society
National Society of Black Engineers
Peer Academic Advising
Peer Health Advisors
Pharmacy Society
Phi Alpha Delta Pre-Law Fraternity
Pi Tau Sigma
Political Legal Academy
Pre-Law Society
Psi Chi
Psychological Students' Association
Society of Physics Students
Society of Women Engineers
Speech and Debate Club
Structural Engineers Association of Southern California
Tau Beta Pi
Teachers of Tomorrow Club
UCDC
USEE-EYES

Environmental Groups

ECO (Environmental Conservation Organization)
Global Peace and Conflict Studies
Greenpeace

Faculty/Staff Organizations

Academic and Professional
Women's Association

Greek Organizations

Sororities

Alpha Chi Omega
Alpha Kappa Alpha
Alpha Phi
Delta Delta Delta
Delta Gamma
Delta Sigma Theta
Gamma Phi Beta
Kappa Alpha Theta
Kappa Kappa Gamma
Kappa Zeta Phi
Phi Zeta Tau
Pi Beta Phi

Fraternities

Alpha Epsilon Pi
Alpha Phi Alpha
Beta Theta Pi
Chi Psi
Kappa Alpha Psi
Kappa Sigma
Lambda Phi Epsilon
Lambda Theta Delta
Phi Delta Theta
Phi Gamma Delta
Phi Kappa Psi
Phi Sigma Kappa
Sigma Alpha Epsilon
Sigma Chi
Sigma Nu

Independent Fraternities

Delta Sigma Phi
Pi Kappa Phi

Greek Councils

ANGLE Network
Greek Presidents' Council
Greek Songfest
Greek Week
Greeks Against Sexual Assault
Interfraternity Council
Panhellenic Council
Greek Honor Society
Order of Omega

International Groups

Education Abroad Program
International Relief and Reconstruction for Democracy Worldwide
Iranian Cultural Club
Model United Nations

Multicultural Organizations

African-American Student Union
American Indian Council
Asian Pacific Student Association
Cambodian Students' Organization
Chinese Association at UCI
Delta Delta
Hong Kong Club
General Union of Palestinian Students
Indian Sub-Continental Club
Irvine Indonesian Student Association
Kababayan
Korean-American Students' Association

Korean Graduate Student Association
MEChA
Mujeres Unidas
Puerto Rican Student/Staff Association
Reaffirming Ethnic Awareness Community Harmony
Republic of China Student Organization
Tomo No Kai
Vietnamese Students Association

Political Groups

Americans for Safe Israel
Association of Graduate School Employees
Campus Coalition for Human Rights
Coalition for Animals and Animal Research
College Republicans
Irvine Students for Life
Israel Jewish Peace Club
Latin American Solidarity Network
Social Awareness Collective
Students for Choice
Young Americans for Freedom
Young Democrats

Recreational Groups

Chess Club
Flying Club
Med Ski and Jet Ski Club
Ski Club
UCI Band
WHOA – Wildebeest Horse Owner's Association

Religious Groups

African-American Student Union Gospel Choir
Agape Meal
Asian American Christian Fellowship
Bahai Club
BSU Christian Fellowship
Campus Christians
Campus Crusade for Christ
Canterbury Irvine
Chinese Christian Fellowship
The COPTS
Evangelical Formosa Fellowship
Hillel
The Holy Ghost Cafe
Inklings
International Christian Student Association
Inter-Varsity Christian Fellowship
Koinonia
Korean Campus Mission
Korean Campus Crusade for Christ
Korean Christian Fellowship
Levite Choir
Little Spark
Messianic Students
Metamorphosis
Muslim Students' Association
Navigators
SEARCH

Studies in the Old and New Testaments

Take and Give Ministry
University Baptist Fellowship
University Catholic Community
UPREACH – Bible Study

Service Groups

Academics Plus
Best Buddies of America
Circle K International
Flying Samaritans International, Student Subchapter
Habitat for Humanity
Multiple Specializations
Oxfam America
Project A
Project Ngoc
Students for Disabled Awareness
University Ambassadors
Vegetarian and Health Club

Social/Support Groups

AntReps
Arab Students' Association
Armenian Students Association
Asian American Medical Students
China Student Scholar Association
Fine Arts Club
French Club
Gay and Lesbian Student Union
Generic Alternative
Korean Information and Computer Science
Na Opio O Ka' Aina (Hawaii Club)
Star Trek Association
Transfer Student Association
Women's Studies Student Association

Sports Clubs

Aikido Club
Badminton Club
Bicycle Racing Club
Fencing Club at UCI
Hockey Club
Hwa Rang Do at UCI
Irvine Women's Crew
Lacrosse Club
Rugby Club
Sailing Association
Ski Racing Team
Softball Club
Surf Club
T'ai Chi and Kung Fu Club
Tang Soo Do Karate
Women's Softball Club
Wrestling Club

Other

Accuracy in Academia
American Society of Civil Engineers
Bare Bones Dance Theatre
Cal-Animage Epsilon
Comedy Club
Friends of KUCI
Planning Club
Residents Association
Society for Creative Anachronism
STEPS – Students to Enhance Peer Sobriety
Toastmasters at UCI
Your Future Productions

Student Government

Associated Students

The Associated Students of the University of California, Irvine (ASUCI) is composed of all registered undergraduate students. Quarterly student fees allow this nonprofit organization to provide leadership, services, entertainment, and social activities for students.

Services

ASUCI funds, manages, and operates the following student services on campus: **Outroads Travel**, which provides both business and leisure travel services; the **ASUCI Recycling Center**, the only multi-material, 24-hour drop-off center in the Irvine/Newport Beach area; and the **UCI Express Shuttle**, which operates three propane-powered vehicles to transport students back and forth between the campus, Irvine, and Newport Beach. In addition, it oversees the **UCI Photo I.D.** program which provides each student with official identification and **UC Items Unlimited**, the newly opened campus specialty store, and it publishes the **UCI Yearbook** and the new student publication, *Who's New Freshman Experience*.

ASUCI also sponsors major concerts at least twice each quarter and popular films and videos which are shown free four times a week in the residence halls and at the Student Center. The Soundstage program brings popular club acts to campus in an intimate setting. Other events include Oktoberfest in the fall, a Reggae Festival and the Wayzgoose celebration in Aldrich Park each spring, free comedy shows, weekly noon concerts, and a jazz series. All ASUCI entertainment programs are coordinated by student commissions, and all interested students are encouraged to participate.

Organization

The ASUCI government consists of a 35-member Council, including 25 representatives from the academic schools and programs and five executive officers, who are elected for one-year terms by the student body each spring. In addition, five appointed nonvoting councilmembers represent various underrepresented organizations on campus. The executive officers help ASUCI achieve its primary goal, to be wholly responsive to student needs and desires. The President deals with Universitywide issues affecting undergraduates, administers the ASUCI budget, and is the primary spokesperson for the Associated Students in policy determinations with campus and systemwide administrations. In addition, the President coordinates student advocacy in both Sacramento and nearby Orange County communities. The Executive Vice President chairs Legislative Council meetings, serves on the Registration Fee Advisory Committee, and supervises the management of all ASUCI elections. The Academic Services Vice President is the primary student liaison to the campus and Universitywide Academic Senate, and directs the Student Recommended Faculty Program through which students can nominate visiting lecturers. The Administrative Services Vice President appoints and monitors more than 60 student representatives to UCI administrative and Academic Senate committees. The Student Services Vice President investigates new services, evaluates current programs, and coordinates all ASUCI entertainment programming. Each of the executive officers works with several appointed student commissioners to carry out these tasks.

ASUCI policy and final budgetary decisions are made by the Council, and each councilperson sits on at least one subcommittee. Elections are held in fall and spring with half of the Council seats filled in each election.

Involvement

ASUCI's primary goal is to further students' involvement in matters pertaining to curricula, funds, administration, and student life. All students concerned about academics, services, representation, or entertainment are encouraged to contact their Council representative or the executive officers at ASUCI; telephone (714) 856-5547.

Associated Graduate Students

All graduate and medical students are members of the Associated Graduate Students (AGS). The purpose of AGS is to promote and provide for the distinct needs and priorities of graduate students. AGS representatives can be reached at (714) 856-6351.

Services

AGS provides graduate students with numerous student-operated services. AGS is the publisher of *AGS Advocate*, a newsletter for graduate students. AGS provides entertainment for graduate students, allocates funds for graduate student projects, contributes to the funding of the College Legal Clinic and to the University of California Student Association, offers a summer loan program, and operates a 24-hour grievance hotline, (714) 856-HELP.

Organization

AGS is governed by a council of members elected from each academic unit conducting a graduate program, a president, who is elected in a campuswide election held during spring quarter, and four vice presidents selected by the AGS Council: the Vice President-Internal Affairs, Vice President-External Affairs, Vice President-Administrative Affairs, and Vice President-Financial Affairs. The AGS Council is an independent entity within UCI, with the exclusive responsibility for representing all graduate students to the UCI administration, Office of the President, and the community at large.

The AGS Council nominates graduate students for positions on UCI administrative committees, UCI Academic Senate committees, ad hoc committees, and committees established by the University of California system's Office of the President. AGS representatives work with the Student Body Presidents' Council and the UC Student Lobby to implement legislation which is supportive of students and crucial to the social needs of the community at large.

Associated Medical Students

The Associated Medical Students (AMS) organization is governed by an elected student council composed of two officers from each class and a student body president, vice president, secretary, and treasurer. The AMS Council along with the AGS Council represent the medical student body in all matters relating to the UCI campus, the University's Office of the President, and the community.

Medical students, as members of AGS, have access to all services funded by the Associated Graduate Students. In addition to these services, the AMS Council utilizes a portion of the quarterly AGS fee to provide funding for medical student activities that benefit the medical school community.

Undergraduate Administrative Intern Program

The Undergraduate 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. Fifteen to 20 students are selected each year and assigned to campus administrative units where they develop programs and projects that benefit student life at UCI. Academic credit, through participation in a weekly seminar, and a stipend are earned by the intern. Additional information is available from the Office of Student Support Services; telephone (714) 856-7760.

UCI Student Center

The UCI Student Center is the destination for anyone at UCI who is looking for a place to study, relax, eat, shop, and be entertained. Among the major tenants are the University Bookstore, Computrends (UCI's computer store), a copy center, bike shop, and travel service. Other facilities include a conference center, 395-seat auditorium, computer lab, automated teller machines and a bank, and a number of restaurants and cafes. Offices for student organizations, recreational lounges, and study space also are located in the Student Center. For additional information and hours of operation, telephone (714) 725-2419.

Campus and Student Services

Campus Calendar

Campus Calendar schedules meeting and event space and provides services for many events and activities which take place on campus. The Office provides information and advice to program planners, interprets University policies and procedures, and advises those planning programs on the most economical, efficient way to use campus support services. Selection and reservations of facilities, orders for staff and equipment support, and cost estimates are processed through the Office. The Calendar Office assigns academic, Extension, and Summer Session classrooms, provides centralized billing for special events, and serves the campus as a central information center by maintaining the master calendar of campus activities. The Office is located in 262 Administration Building; telephone (714) 856-5252.

Career Planning and Placement Center

The Career Planning and Placement Center is responsible for assisting UCI students in career planning and decision making through workshops, individual counseling, part-time and summer employment opportunities and internships; for assisting students and alumni seeking career employment opportunities; for teaching job-search skills and interviewing techniques; for providing career job listings and administering a full program of on-campus recruitment; and for providing graduate and professional school information. Vocational interest testing and a computerized guidance system are available on a fee-for-service basis.

The Center's Student Internship Program provides UCI students with a variety of opportunities to obtain career-related work experience. Students are assisted in finding paid or volunteer internships in business, industry, and government. The Center also sponsors the UCDC Internship Program, which selects UCI undergraduate and graduate students for internships in Washington, D.C. The program provides students with an opportunity to examine the behind-the-scenes activities that shape and implement the nation's future course.

The Center's Educational Career Services assists candidates for Teaching Credentials as well as Master's and Ph.D. degree candidates seeking teaching, administrative, and counseling positions in education. Placement files are maintained and kept active free of charge for six months from the date of graduation. The first 10 files mailed out to educational employers are free; a fee of \$4 per file is charged thereafter. A reactivation fee (which applies after the initial six-month period) is \$45 for 12 months of service.

In addition, the Center offers services and programs to meet specialized needs of specific student populations, including the disabled, women, minority and disadvantaged students, and returning students. Additional information is available from the Career Planning and Placement Center; telephone (714) 856-6881.

Child Care Services

Child Care Services is organized into five Centers offering full-time and part-time programs. The Infant/Toddler Center provides services for children from three months to two and one-half years of age. The Early Childhood Education Center, the Verano Preschool, and the Children's Center provide educational programs and care for children two and one-half to kindergarten age; the Extended Day Care Center serves children ages five to 12. The programs are designed to meet the individual needs of each child. Toward that end, the Centers provide environments in which diverse cultural, ethnic, and personal teaching and parenting styles are encouraged. 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. Information may be obtained by visiting the Centers or telephoning (714) 725-2100.

University Montessori School of Irvine is the sixth child care center serving UCI students, faculty, and staff. The School serves 180 children ages three months through kindergarten. Enrollment is on a first-come, first-served basis. Additional information is available from the School; telephone (714) 854-6030.

Conference Services

Conference Services is a comprehensive service for conferences, workshops, and seminars held either at UCI or near the campus. Information, program and budget planning, dining services, and lodging accommodations are arranged by the Conference Services Office. Recreational activities, including use of University facilities, and tours of the area also can be provided. Conference Services is located in 105 Administration Building; telephone (714) 856-6963.

Counseling Center

The Counseling Center offers a variety of programs through which students can learn cognitive, affective, and behavioral skills which will enable them to function more effectively in an educational environment. Individual, group, couple, and family psychotherapy are available to all students, as well as crisis intervention services when needed. Staff also provide students with a wide range of workshops and academic courses related to learning and interpersonal issues including stress reduction, assertiveness, coping with depression, human sexuality, cross-cultural interaction, and intimacy and friendships. Staff psychologists train student group leaders, student interns, resident assistants, peer academic advisors, and administrative personnel on topics including stress management, communication, listening, leadership, group dynamics, and crisis intervention skills. The Counseling Center is located on the second floor of Student Services I; telephone (714) 856-6457.

Dean of Students

The Office of the Dean of Students oversees programs and services which promote the building of campus community, the appreciation of cultural diversity, the testing and refining of personal values, the development of leadership potential, the understanding of community service, and the opportunity for critical thinking. The Office staff also handle matters of student conduct and administer student discipline. Additional information is available by telephoning (714) 856-5590. The Office is located on the second floor of Student Services I.

Health Education

Health Education offers the campus community educational programs and workshops, a resource library, educational videos, pamphlets and brochures on a variety of health and wellness topics, and individual consultation. Programs include Sexual Health, Nutrition, and UCI'm Aware Alcohol and Drug Abuse Prevention.

Health Education provides students with a variety of involvement opportunities as peer educators and leaders via the Peer Health Advising Program, the Students to Enhance Peer Sobriety (STEPS) Program, the ANGLE Network (Advocate for National Greek Leadership and Education), and Student Health Advisory Committee. Additionally, Health Education coordinates student volunteer placement in the Student Health Service as well as in community health care settings. Health Education is located in 106 Gateway Commons; telephone (714) 856-5806. Hours are 8 a.m. to 5 p.m., Monday through Friday.

Housing

Off-Campus Housing

The Off-Campus Student Services Office provides services to help UCI students locate and obtain off-campus housing. Information provided includes lists of apartments and houses for rent, rooms for rent in private homes, roommates wanted, roommates available, and temporary housing.

In addition, the Office publishes *Living Around UCI*, a guide to apartment complexes located near the University which includes rental prices, local realtors, and utility companies. The publication also contains information on budgeting expenses, roommate selection, and tenant/landlord rights and obligations.

Representative monthly rental prices for apartments, condominiums, and houses in the Irvine area in fall 1990 were \$585 for a studio/bachelor or one-bedroom apartment, \$890 for a two-bedroom, and \$1,240 for a three-bedroom unit. A student's individual rent costs will be determined by the number of people sharing the unit.

The Office has a courtesy telephone which may be used to make local phone calls regarding housing. Advisors are available to answer questions and provide additional information related to off-campus living. The Off-Campus Student Services Office is located in 209 Administration Building and is open from 8 a.m. to 5 p.m. weekdays. From August 19 through Labor Day the Office is open on Saturdays from 8 a.m. to 6 p.m. Additional information is available from the Office; telephone (714) 856-7247.

Housing Options Made Easier (HOME), a program sponsored by Off-Campus Student Services, provides information on locating housing, selecting a roommate, commuter-student survival tips, and more. Student staff provides first-hand information on all aspects of living off campus. The HOME program's fee covers workshops, tours, and information packets.

The Off-Campus Student Services Office provides additional programs for commuter students; see Freshman/Transfer Challenge.

Meal Plans for Nonresidents

Students who live off campus or in UCI apartments may wish to take advantage of a Nonresident Meal contract which enables them to eat meals in the residence halls. In 1991-92, the 19-meal-per-week plan will provide three meals a day, Monday through Friday, and brunch and dinner on weekends for \$565.50 per quarter. A second plan offers any 14 meals a week for \$526.50 a quarter; 10 meals a week may be purchased for \$507 a quarter; and five meals will cost \$24 a week.

Also available for students who do not live in the residence halls are Meal Punch Cards. Punch cards are available at \$2.25 per punch and are discounted to \$2.15 per punch when more than 50 punches are purchased. Breakfast will cost one punch, lunch two punches, and dinner three punches. Meal contracts and punch cards may be purchased from UCI Residential Dining; telephone (714) 856-4182. The office is located in a trailer behind the Student Health Center.

On-Campus Housing

Housing Administrative Services coordinates application procedures and contracts with campus residents. Approximately 27 percent of UCI's student body is housed on campus. A booklet describing housing options on campus is mailed to all applicants who indicate an interest in living on campus when they apply for admission to UCI; it also is available from the Housing Office; telephone (714) 856-6811.

Undergraduate Housing

Mesa Court and **Middle Earth**, UCI's residence halls, house 2,330 single undergraduate students. Each hall houses from 40 to 60 students and a student resident assistant. The small-scale buildings provide excellent opportunities for social interaction, student government, and leadership experience. Each hall tends to have distinctive characteristics and often focuses on a specific interest or life-style. Examples include halls devoted to the fine arts, the humanities, languages, the outdoors, or crafts. The residences are divided into suites of four or five double rooms, with living room and bath; each residence also contains a lounge and recreation and study rooms. A limited number of single rooms also are available in each residence hall. Every room has carpeting and draperies, and is furnished with a bed, desk, chair, chest of drawers, closet, and bookshelves for each student.

Both Mesa Court and Middle Earth residence halls have complete food service and dining commons for their residents. Students who live in the residence halls participate in prepaid 14- or 19-meal-per-week plans. Meals are served cafeteria-style, and the menu offers a wide selection of food, with fresh fruit and an array of salads daily. Meals are served three times daily on weekdays (brunch and dinner on weekends). The halls are closed during the Christmas recess, and although they remain open over the Thanksgiving holiday and the spring recess, no meals are served.

The Student Programs Offices at Mesa Court and Middle Earth have responsibility for providing student residents with an environment conducive to their intellectual, social, and personal growth. The housing staffs work closely with students to create opportunities for educational exploration and ways of developing interpersonal skills. The residence halls have distinctive personalities. In many cases, an academic interest characterizes a hall style. The Fine Arts Hall is an example of a special interest hall program. Weekend field trips and retreats, designed to amplify on-campus experiences, are often part of the interest hall program. The Student Programs Offices also supervise and train

resident assistants, advise the residential student government, and coordinate information and skill development workshops.

Charges for the 1991-92 academic year (late September through mid-June) are \$5,593-5,893 for a single room and \$4,993-5,293 for a double room; rates include a \$21 annual community association fee. An increase in cost is anticipated for the 1992-93 academic year. The cost of room and board in the residence halls is paid in quarterly payments.

Campus Village, an apartment complex for single undergraduates, offers 200 two-bedroom apartments housing 800 students. Most of the units are furnished; all include carpeting, draperies, a stove, and a refrigerator. Various programs are offered in the Village's Community Center, lounges, and recreation buildings. Rates for the 1991-92 academic year, which include utilities, are \$2,443 per student for an unfurnished apartment and \$2,736 per student for a furnished apartment. An increase in rates for 1992-93 is anticipated.

Some undergraduate students may qualify to live in Verano Place; see below.

Undergraduate and Graduate Housing

An unusual housing option at UCI is the 80-space recreational vehicle park, Irvine Meadows West, which provides housing for graduate and undergraduate students. The rate for 1991-92 is \$100 per month per space. Students must provide their own recreational vehicle or trailer which must contain a sink, hardware for running water, and a stove. Currently, there is a one-year waiting list.

Graduate Housing

The University has 862 one-, two-, and three-bedroom apartments in **Verano Place** for full-time, registered graduate students, and for students who are married, single parents, or who are single and 25 years of age or older. The majority of the apartments are unfurnished, and all have carpeting, draperies, a stove, and a refrigerator. They are attractive and considerably lower in rent than comparable units in local communities. An assortment of social, cultural, and educational programs such as community dinners, courses, and workshops is offered in the community. There is currently a one-year waiting list.

Palo Verde apartments, UCI's newest graduate housing complexes, consists of three- and four-story buildings in a setting of landscaped courtyards and pathways. This 204-unit complex for full-time graduate students, medical residents, and postdoctoral students was designed primarily for adult living, and there are no playgrounds for children.

Quenya residence hall houses 60 primarily first-year, single graduate students in single rooms. Located within the Middle Earth residence hall community, Quenya is available during the *academic year only*. Each unit is furnished and contains computer hook-up capabilities. Public areas include bathrooms, suite study rooms, kitchenettes, laundries, and sun balconies. Fourteen- or 19-meal-per-week plans are included in the cost.

Current rates for Verano Place, Palo Verde, and Quenya residence hall are contained in the Graduate/Family Housing booklet.

To Apply

A housing application is mailed to all applicants who indicate an interest in on-campus housing on their application for admission for undergraduate or graduate study. Students may apply for only one on-campus housing option, when choosing between the residence halls or the Campus Village communities. Students applying for Verano Place, Irvine Meadows West, Quenya, and Palo Verde may choose as many options for which they are eligible (and would be willing to accept if offered), ranking their choices

in order of preference. A \$15 nonrefundable application fee must accompany the housing application.

Due to the high demand for accommodations in the residence halls and Campus Village, new undergraduate students for the 1992-93 academic year who submit housing applications by March 1, 1992 will participate in a lottery. Applicants will be notified of their lottery status by early April. To maintain lottery status, new students must submit their Statement of Intent to Register (SIR) to the Admissions Office by May 1, 1992 (advanced standing students must submit their SIR by June 1, 1992).

Applications for the residence halls and Campus Village received after March 1, 1992, as well as all applications for Verano Place, Palo Verde, Quenya, and Irvine Meadows West, will be placed on waiting lists until space becomes available.

All interested applicants are urged to apply for housing as early as possible. Persons applying for Verano Place, Palo Verde, Quenya, and Irvine Meadows West do not have to be registered students to apply, but must show proof of enrollment when they sign their residence contract. For additional information, telephone (714) 856-6811.

Media Services

The Media Services Department provides recharge services for television, media productions, and audiovisual aids to all UCI departments, recognized campus organizations, and special programs. These services include equipment rental, film ordering, equipment repair, lecture hall media support, and multimedia and television production.

Media Services' main office is located in A-100-G Science Lecture Hall. Hours are 8 a.m. to 6 p.m., Monday through Friday. For general information, equipment rental, or lecture hall services, telephone (714) 856-5128. For film ordering or repair, telephone (714) 856-6233. For equipment repair or production services, telephone (714) 856-4210.

Student Health Service

All fully registered students and students approved for participation in the part-time study program are eligible for Student Health Service benefits. Student health facilities are housed in the Student Health Center, located at the corner of Berkeley Road and Pereira Drive. Facilities include an outpatient clinic, staffed by physicians and nurses, and supported by an X-ray and clinical laboratory. General medical clinics are held 8 a.m. to 5 p.m. every day during the week and are available by appointment or on a walk-in basis. Urgent, after-hours care is available until 8 p.m. on weeknights, and from 11 a.m. until 2 p.m. on Saturday and Sunday. Specialty clinics are held at variously scheduled times by appointment and include Dermatology, Gynecology, Orthopedics, Mental Health, Women's Health, Men's Health, Minor Surgery, and Ear, Nose, and Throat.

To be qualified to use the Student Health Service, each fully registered student must have complied with the medical history and physical examination requirement of UCI. *Students are not eligible for benefits until these records are on file in the medical records department of the Student Health Center.* Medical history and physical examination forms are mailed to new undergraduate and graduate students and to readmitted students as their names become available to the Student Health Service. Medical students receive the packets from Medical Student Admissions. International students' packets are mailed by the Office of International Services with their initial registration packet. Students should

check with the Student Health Service for information on the benefits and limitations under the emergency medical fund.

Student health coverage extends from the first day of the quarter to, but not including, the first day of the following quarter, but begins only after the student has paid the full Registration Fee and has been issued the Class Verification and Identification Card. There is an exception for spring quarter coverage which extends only to the last day of that quarter.

An optional insurance plan covering major medical occurrences for undergraduates, spouses, and children including coverage for the summer or one unregistered quarter each year is available. Enrollment in this plan which is limited to a short time at the beginning of each quarter, is strongly recommended. To ensure coverage, students should visit the Student Health Center during the first week of each quarter for information and application forms.

All graduate, medical, and international 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 fee waived. Additional information is available in the Expenses and Fees section of this *Catalogue* and from the Student Health Service Insurance Coordinator; telephone (714) 856-7093.

Physical Examinations and Health Clearances. All new students and students returning to UCI after an absence of two or more quarters are required to have a complete physical examination within 90 days prior to the first day of the quarter. The examination may be performed by the student's own physician. If this is impractical, the examination can be obtained at the Student Health Center for a fee. For an appointment telephone (714) 856-5304. Students transferring from another University of California campus where their medical records are on file should have the records transferred to the UCI Student Health Center. Failure to comply with the physical examination requirement results in loss of emergency medical fund eligibility, and a fee for services provided by the Student Health Service.

Student Health coverage provides as many services as possible without additional charge; however, some services are available only on a fee-for-service basis. Some of the services available for a charge are immunizations; allergy desensitization injections; prescriptions from the Student Health Pharmacy; cosmetic dermatology; dental services including minor surgery; radiology laboratory tests; and, time permitting, physical examinations for employment, insurance, or a marriage license. Professional counseling and help for emotional problems are available through the Mental Health Division of the Student Health Service. Psychiatric and psychological services, as well as headache and biofeedback relaxation training, are available. Eye care is available on a fee-for-service basis to students and their spouses at the Eye Clinic located in the Student Health Center. Appointments with the optometrist can be made by telephoning (714) 856-5304.

The Student Health Service encourages preventive medicine. It supplements but does not supplant the family physician. Full and mutual cooperation between the Student Health Service and the family physician is encouraged.

Health education courses offered for academic credit through University Affairs and the Office of Teacher Education include training for Peer Health Advising and teaching plaque control techniques to dental patients, work experience at the Student Health Center, and field work opportunities in the community. The Student Health Advisory Committee (SHAC) welcomes participation from both undergraduate and graduate students and also offers University Affairs course credit. For information regarding these programs, contact the Student Health Center at (714) 856-7749 or the Health Education Office at (714) 856-5806.

Student Support Services

The Office of Student Support Services emphasizes orientation, outreach, service, and leadership development programs. Orientation programs include the Student-Parent Orientation Program (SPOP), a live-in experience on campus for new students and their parents; Uni-Prep, a five-day, intensive program in September to help new students develop increased social and intellectual skills; winter orientation for new students; a spring information program for UCI applicants; and Welcome Week, held in the fall.

The Student Support Services Office coordinates the programs for disabled and international students, students who reside off campus, gay and lesbian students, veterans and nontraditional students, and undergraduate administrative interns, and for the Women's Resource Center. In addition, the Office provides services and programs for new students through New Student Programs, the Peer Mentor Program, and the Freshman/Transfer Challenge. The Office and its various programs provide hundreds of student leadership and student employment opportunities. The Office is located in 201 and 209 Administration Building; telephone (714) 856-7760.

The **Office of Disabled Student Services** offers disabled students opportunities to ensure their effective participation in the academic community at UCI. Students with varying disabilities including those who use wheelchairs, semi-ambulatory, blind or visually impaired, deaf or hearing-impaired, learning-disabled, or who have chronic health problems are eligible to receive support services through this program. Staff assist students from the point of their admission to UCI through graduation. Specialized services include reader services, test-taking assistance, priority registration, provision of notetakers and interpreters, liaison with faculty and campus departments, and on-campus transportation. In addition, a van is available (by reservation, certain restrictions apply) for off-campus transportation for medically and academically related purposes. All buildings on the Irvine campus are accessible to wheelchairs.

Individual students with disabilities may qualify for accommodations based on the nature of their disability. Students should provide evidence of such disabilities to Disabled Student Services. Accommodations and academically related services are determined by the nature and extent of the disability and are provided based upon recommendation of Disabled Student Services. Some academic accommodations may require approval of the Chair or the Dean or Director of the student's academic unit.

Disabled students who require accommodations for the classroom (such as the service of an interpreter or notetaker) are strongly urged to contact the Disabled Student Services Office as soon as possible after admission in order to acquaint themselves with the policies and services of the campus. The Office is located next to the Humanities Trailer Complex; telephone (714) 856-7494 (voice), 856-6272 (TDD).

The Office of **International Services** provides services to international students, permanent residents, refugees, and international faculty members and scholars and their families. Services include assistance with visa and immigration forms and the interpretation of government regulations. In addition, the staff provides information about all the necessary services for effective participation in the University community including housing, tutoring, orientation, registration, financial aid, and student activities. The staff refers students to other campus support services as necessary. The Office is located in 201 Administration Building; telephone (714) 856-7249.

The **Nontraditional Students Program** offers services to students returning to school after an interruption in their education. The staff assists with programming, counseling, orientation, and other student activities. This Office is located in 201 Administration Building; telephone (714) 856-7249.

The **Veterans Program** emphasizes support services for veteran students and eligible dependents of veterans. Assistance includes benefit certification, tutorial services, work-study, orientation, and outreach programs. The Office is located in 209 Administration Building; telephone (714) 856-6477.

New Student Programs staff provides assistance and information to students who are in the process of being admitted to UCI. It also coordinates parent and mentor programs. The **Peer Mentor Program** provides a forum for new students to interact with continuing UCI students, who serve as mentors. Information about the Peer Mentor Program is available; telephone (714) 856-4824. In addition, New Student Programs operates the **Information Center** located in the Administration Building lobby; telephone (714) 856-6345. Professional staff and student volunteers are available to provide a variety of information about UCI and to assist campus visitors and new students.

Off-Campus Student Services provides a variety of services for prospective students as well as for enrolled UCI students who live off campus. Among the programs are assistance in locating housing, roommates, and carpools; advice and personal tips on living off campus, and a Commuter Club.

The Office also coordinates **The Freshman/Transfer Challenge**, a fall-quarter orientation class for new students who live off campus. Further information also is available from 209 Administration Building or by telephoning (714) 856-7247.

The **Women's Resource Center (WRC)** is located on the first floor of Gateway Commons. The WRC offers a supportive environment for all women through programs and services that adapt to the changing needs of the UCI community. Services include workshops, support groups, peer and professional counseling, rape prevention, a library, topic files, a parent locator service for children's medical emergencies, and a referral service. Additional information is available from the Center; telephone (714) 856-6000.

University Bookstore

The University Bookstore, located in the UCI Student Center, stocks all required and recommended course books for classes taught at UCI. It also carries an extensive selection of general and technical books, periodicals, classical music on compact disc and cassette, school supplies, assorted sundries, AnteaterGear sportswear, and UCI gifts.

Regular hours of operation are 8 a.m. to 6 p.m., Monday through Friday; 10 a.m. to 4 p.m., Saturday. During the first week of instruction each quarter, hours are extended as follows: 8 a.m. to 8 p.m., Monday through Thursday; 8 a.m. to 6 p.m., Friday; 10 a.m. to 4 p.m., Saturday. The Bookstore telephone number is (714) 725-BOOK.

Computrends, located in the UCI Student Center, is a retail computer store serving the campus. The store carries a variety of brand name microcomputers offered through University purchase programs, often at substantial discounts. Computrends also stocks a wide variety of software, accessories, and computer supplies. Hours of operation are 9 a.m. to 6 p.m., Monday through Friday. For more information call (714) 856-4266.



An opportunity to smear a cream pie in the face of the Associated Students of UCI president was the highlight of a messy but successful ASUCI-sponsored voter registration drive conducted during Welcome Week.

MACLAB is a computing resource center operated by Computrends. Located in the UCI Student Center, MacLab gives UCI students and staff access to Macintosh computers and low-cost, high-quality printing services. Come and visit, or call (714) 856-7096. Hours are 9 a.m. to 6 p.m., Monday through Friday.

The Gallery Bookshop, in the Fine Arts Gallery, carries studio publications, books, posters, periodicals, and artist-designed gifts. Hours of operation are 12 noon to 5 p.m., Tuesday through Sunday. Telephone (714) 725-ART-1 for information.

The UCI Professional Bookstore, located across Campus Drive from UCI in the Marketplace, provides the University community with course books required for University extension classes, medical reference books, medical instruments, law books, and supplies. Telephone (714) 856-7365 for more information.

Zot n Go convenience stores are in four locations on campus: the UCI Student Center, Biological Sciences Plaza, Mesa Court, and Middle Earth. They stock snacks, beverages, school supplies, and test forms.

Paul S. Sypherd, Vice Chancellor for Research and Dean of Graduate Studies

Research and graduate education, two major areas of responsibility of the Office of Research and Graduate Studies, are vital and integral parts of academic life at UCI. Programs leading to doctoral or master's degrees are offered in more than 100 academic and professional areas. Many of UCI's graduate programs and research activities have achieved national reputations for excellence, and several are internationally recognized as leaders in their respective fields. UCI graduate programs continue to grow and to evolve in directions that are consistent with the University's teaching, research, and public service missions. Graduate study at UCI provides the excitement and satisfaction that spring from the discovery and dissemination of new knowledge, as well as from meeting new challenges.

The Vice Chancellor for Research and Dean of Graduate Studies has general administrative responsibility for research and graduate education. In the area of research, the Vice Chancellor has responsibility for the administration of extramurally funded research and training grants, general research administration, and research policy development and implementation. Graduate education responsibilities include admissions, enrolled-student actions and advising, degree awards, fellowship and assistantship administration, teaching assistant training, and the Graduate and Professional Opportunity Program, which facilitates the involvement of minority students and women in graduate education.

The Office of Research and Graduate Studies also is administratively responsible for Organized Research Units, Irvine Research Units, Focused Research Programs, contract and grant administration, and other campus research activities. The following sections describe areas of research and graduate education, and include information about academic regulations and policies important to applicants and graduate students.

Research

The University of California is the State's primary research institution. Most scholarly research and creative activities are supported by University funds or by grants and contracts from federal and state agencies, foundations, corporations, and individual sponsors. Faculty at UCI participate in activities in many traditional fields of endeavor as well as in "new" interdisciplinary pursuits. For example, in the humanities, UCI has become a world center for the study of critical theory. In physics, UCI scientists are involved in ongoing studies on the nature of subatomic particles. Members of the Chemistry faculty are leaders in the study of atmospheric phenomena such as ozone depletion. Faculty research in biomedical sciences covers a wide range of areas including neuroscience, molecular biology, genetics, and cancer-related studies.

The Vice Chancellor for Research has responsibility for research administration, including research policy, research development, organized research activities, UCI-industry relations involving research, animal research administration, and research committee support. In addition, the Vice Chancellor is responsible for contract and grant administration which includes the submission of proposals, acceptance of grant and contract awards, and negotiation of all awards for extramurally funded research, training, fellowship, and public service programs. The Office of Research and Graduate Studies also maintains a resource center containing the most current information about extramural funding sources for student and faculty research.

While most research takes place at the academic unit level, the academic quality of many of UCI's educational programs is enhanced by Organized Research Units, Irvine Research Units, and Focused Research Programs that extend beyond unit boundaries.

University of California Humanities Research Institute

The University of California Humanities Research Institute was established on the Irvine campus in September 1987 to provide a Universitywide locus for collaborative and individual research in the humanities among University of California scholars and their national and international colleagues.

The Institute sponsors conferences, seminars, and workshops addressing themes at the forefront of current dialogue in the humanities, providing forums for the emergence and enhancement of new research interests and scholarly collaboration. In addition, the Institute produces a series of publications, including conference proceedings, monographs, and books developed through these various forums.

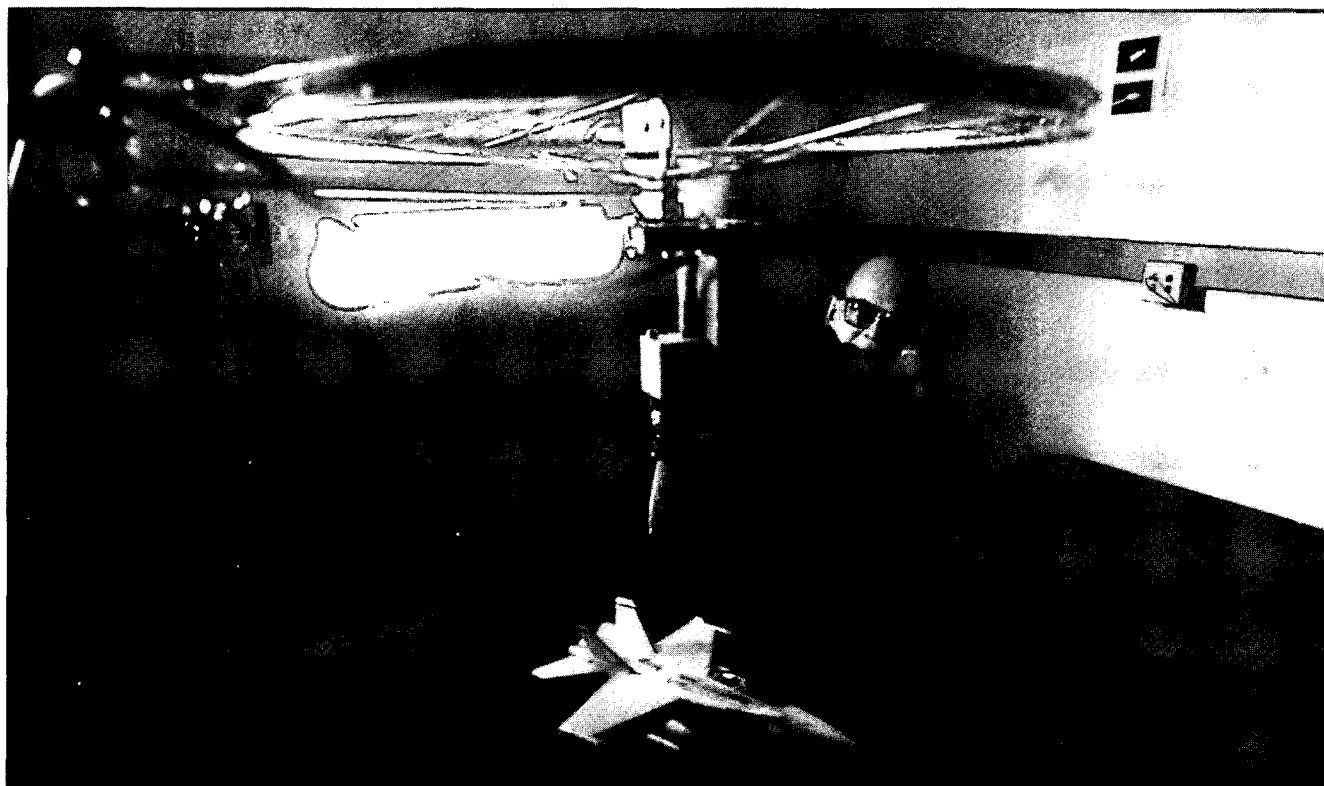
Research themes are developed from four major areas of humanistic concern: (1) Area studies—western, eastern, Third World, dominant, and minority cultures, examined individually or comparatively; (2) Historical studies—the retrieval of texts and contexts in the major literary periods, examined individually or comparatively; (3) Discourse studies—the languages of the arts, the humanities, and the sciences; and (4) Humanities beyond its boundaries—humanistic concerns in medicine, law, business, science, technology, public policy, and public institutions.

Organized Research Units

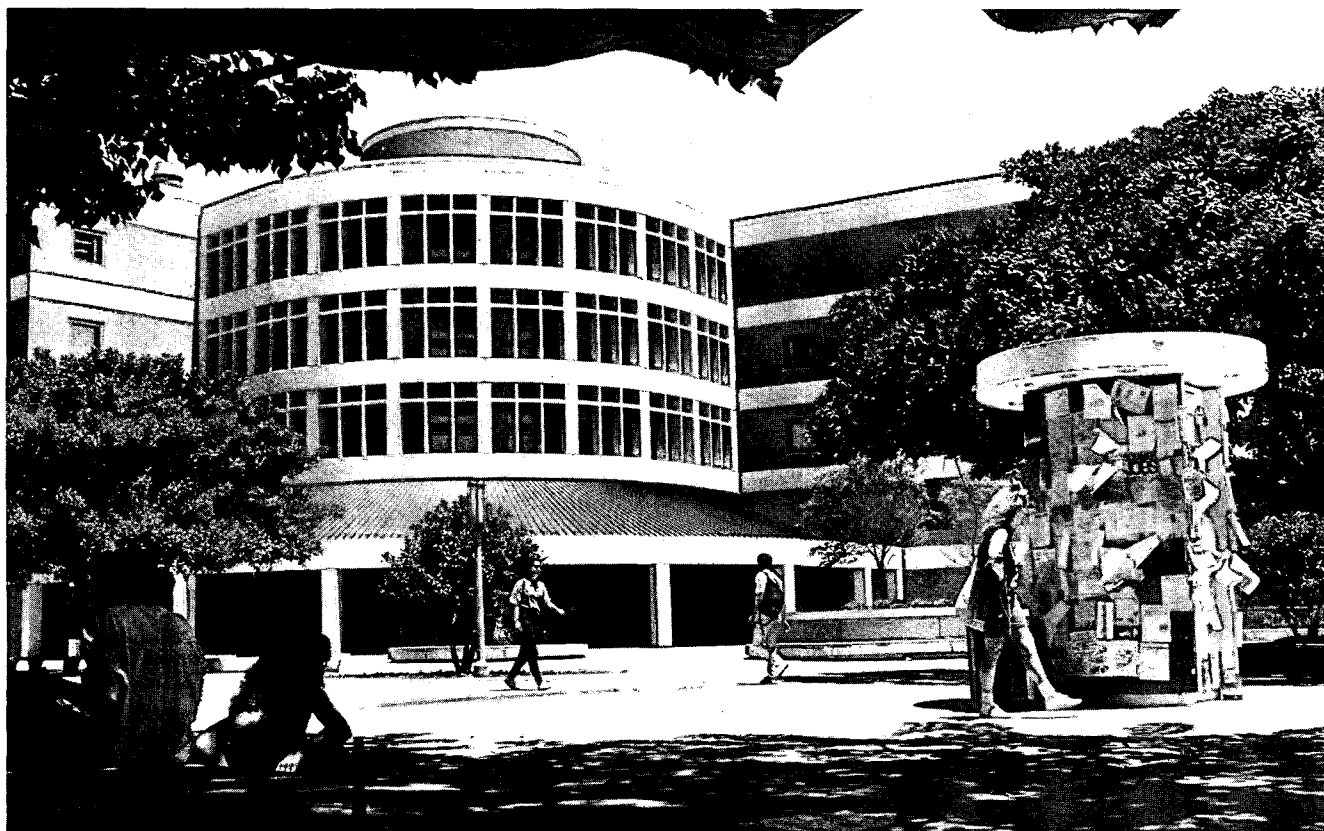
Organized Research Units (ORUs) normally consist of an interdepartmental group of faculty, students, and other researchers engaged in a continuing program of multidisciplinary or interdisciplinary research, supported by both University and extramural funding. The work of some ORUs is directed toward 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. Organized Research Units established on the Irvine campus by The Regents of the University are the Cancer Research Institute, the Center for the Neurobiology of Learning and Memory, the Critical Theory Institute, the Developmental Biology Center, the Institute of Transportation Studies (ITS), the Institute for Surface and Interface Science (ISIS), and the Public Policy Research Organization (PPRO).

Cancer Research Institute

The Cancer Research Institute provides leadership and support for researchers working toward understanding and controlling cancer. The Institute serves as a means of focusing, coordinating, and directing efforts of scholars in basic and clinical sciences from several departments of the School of Biological Sciences and the College of Medicine. It provides a central source of information concerning cancer-related research, as well as a forum in which basic researchers and clinicians can assess advances that may be of immediate value in the diagnosis and treatment of cancer, and in the detection of chemicals or conditions that cause cancer. Ongoing and projected research activities involve the regulation of cell function, viral carcinogenesis, immunology, and basic molecular processes relevant to cancer.



Rui de Figueiredo, Professor of Electrical and Computer Engineering and of Mathematics, demonstrates a photometric stereo system. A camera-connected computer determines three-dimensional shape from reflected light on an object at three different points.



A nuclear magnetic resonance laboratory and a variety of research programs, including those in plasma and condensed matter physics and synthetic organic, synthetic inorganic, and bioorganic chemistry, are housed in the Physical Sciences II building.

Center for the Neurobiology of Learning and Memory

The Center for the Neurobiology of Learning and Memory fosters multidisciplinary research concerning the neurobiological processes underlying learning and memory. Research efforts are stimulated and coordinated through research seminars, colloquia, quarterly meetings, and international conferences, as well as collaborative research projects involving faculty members of the Center, visiting fellows, postdoctoral fellows, graduate students, and undergraduate students. Research programs include investigations at several levels of analysis including cell chemistry, cell physiology, brain systems, cognitive processes, and neural modeling. Members include faculty from the Department of Psychobiology in the School of Biological Sciences, the Department of Pharmacology in the College of Medicine, the Department of Information and Computer Science, the Department of Physics in the School of Physical Sciences, and the School of Social Sciences, as well as faculty from other UC campuses.

Critical Theory Institute

The Critical Theory Institute provides a locus for the conduct and support of collaborative, interdisciplinary research focused on the theoretical underpinnings of such fields as history, literature, philosophy, art, and politics. The Institute's principal function is to provide a forum for debate among competing movements in contemporary critical theory so that existing theoretical models can be challenged and refined. The Institute's research consists not only of the application of theory to data but also of self-reflexive investigation of theoretical presuppositions in order to produce alternative theoretical constructs and strategies.

A recently completed research project of the Institute concerns the increasingly complex nature of the problem of representation in contemporary theories of literature, art, history, and the social sciences. A current project focuses on recent transformations in the concepts and use of language and discourse in the various fields and disciplines of the human sciences (humanities and social sciences). It studies the impact of the displacement of traditional, "natural" models for language by institutional or communicational models.

The Institute organizes colloquia, lectures, seminars, and workshops in which leading theorists from the United States and abroad participate in its research projects. It also sponsors the annual Welles Library Lectures in which a leading theorist gives a series of lectures on a topic of importance in critical theory.

Developmental Biology Center

The Developmental Biology Center (DBC) provides focus and support for research in developmental biology in several departments of the School of Biological Sciences and the College of Medicine. The research activities are concerned with identifying the activities of cells that convert the fertilized egg into a fully formed and functioning organism. These activities, which include cell division, migration, and differentiation, are controlled by localized factors in the egg and by interactions between cells that are not yet understood. DBC investigators are studying these problems at the molecular, genetic, and cellular levels using a variety of experimental organisms. The DBC is the site of a National Science Foundation Biological Facilities Center which provides the latest technology in microscopic imaging, computer-based image processing and analysis, flow cytometry, single-cell microinjection, and DNA sequence analysis. A National Institute of Health Predoctoral and Postdoctoral Training Program provides support for some of the DBC trainees, and an Industrial Internship program is available for undergraduates. The DBC sponsors

and organizes local, national, and international conferences and hosts visiting scientists for collaborative research work. The results of the work will contribute to the understanding of normal development, growth control, and the regeneration of body parts as well as abnormalities that lead to birth defects, cancer, and nervous-system malfunction in the human body.

Institute for Surface and Interface Science

The Institute for Surface and Interface Science provides an interdisciplinary environment for the study of phenomena which occur at the boundaries between phases of matter. The properties of surfaces and interfaces control a wide variety of technologically important problems, including corrosion and lubrication phenomena, the behavior of semiconductor devices, the fabrication of integrated circuits, and catalysts used in automobile exhaust systems. Research into the properties of surfaces and interfaces is conducted by faculty from the Departments of Chemistry and Physics in the School of Physical Sciences and from the Department of Electrical Engineering in the School of Engineering. The Institute supports a number of programs to enhance the environment for collaborative research, including a Distinguished Lecturer Program which brings senior scholars from around the world to UCI, visiting fellows programs, postdoctoral fellowships, seminars, and conferences.

Institute of Transportation Studies

The Institute of Transportation Studies at Irvine (ITS-Irvine) is part of a multicampus research unit of the University of California which was established in 1947 to assist in research and education related to transportation system operation, technology, and policy.

The Irvine branch of the Institute was established in 1974. Emphasis at Irvine has been on the development of a strong interdisciplinary research capability. ITS-Irvine research involves faculty and students from the School of Engineering, the Graduate School of Management, the School of Social Sciences, and the Program in Social Ecology. The Institute hosts visiting scholars from the U.S. and abroad to facilitate collaborative research and information exchange. Conferences and colloquia to disseminate research results to the broader academic and professional community also are sponsored by the Institute.

Research at ITS-Irvine focuses upon planning and analysis of transportation systems, transportation safety, transportation engineering and operations, expert systems, transportation economics, fiscal and administrative issues in public transit, and energy and environmental issues. Recent projects have dealt with the monitoring and control of urban freeway traffic, truck accidents on urban freeways, transit service contracting, forecasting of transportation energy demand, alternative fuels, highway pricing and investment, suburban land use/travel relationships, freeway carpooling behavior, household adaptation to changing travel characteristics, effects of commuting on health and community well-being, and application of expert systems and image processing to pavement rehabilitation and hazardous waste management.

The transportation research program at Irvine is augmented by the Transportation Systems Center and the ITS-Irvine Transportation Library. The Transportation Systems Center offers a variety of computer services in support of research and training. The ITS-Irvine Transportation Library contains books, journals, technical reports, and dissertations in the field of transportation, and offers a variety of manual and computer-based information retrieval services.

The Institute maintains a regular publication series of reports documenting its research. ITS-Irvine is the editorial headquarters of the international journals *Transportation Research* and *Accident Analysis and Prevention*.

In conjunction with University Extension, ITS-Irvine sponsors short courses and certificate programs for the nation's transportation professionals. Specialty conferences, such as the 1986 National Conference on Commuter Lanes and Transitways and the 1988 conference "Paying the Toll": National Perspectives on Toll Road Development, attract an international audience.

The Institute works closely with campus academic units to enhance graduate education in the areas of transportation planning, engineering, management, and policy. Courses of study leading to graduate degrees in the School of Engineering, the School of Social Sciences, and the Graduate School of Management are available for students interested in transportation studies. The Institute extends its support to a large number of graduate students from these various disciplines, enabling students to enrich their studies by participating in ongoing research.

Public Policy Research Organization

The Public Policy Research Organization (PPRO) is a multidisciplinary research unit that conducts basic and policy-related research in social sciences. Research efforts are focused on four programmatic areas: impacts of technology, community and environmental issues, organizational management, and issues of interest to Orange County, including an annual public opinion survey of Orange County residents.

A combination of faculty from the Graduate School of Management, Department of Information and Computer Science, School of Social Sciences, Program in Social Ecology, and College of Medicine work with the unit. Their areas of expertise include public administration, economics, law, information and computer science, public finance, political science, sociology, psychology, planning, and public health. Currently, about 50 faculty and their students are conducting research in PPRO.

Like the staff, PPRO research projects reflect a multidisciplinary nature. Ongoing studies include the future of computerized information systems in governments; the use of mathematical evidence in court; the effects of seat-belt restraint on incidence of injuries to children; the effects of parents' commitments to work and child-rearing on family life; and the use and impact of white-collar utilization of office automation. Additional studies involve an examination of the impact of governmental policy on the production and use of computer technology in Pacific Rim nations; an inspection of Asian organized crime in California and New York; and an investigation of the variety and effectiveness of worksite and school health-promotion programs that currently exist.

PPRO projects are based in the social sciences and many have requirements for original data collection and sophisticated analysis. In support of data collection activities, PPRO has developed the Center for Survey Research which includes state-of-the-art Computer Assisted Interviewing (CATI) capabilities, data management and data analysis, and on-line, interactive computing. PPRO's administrative support team includes professional support in proposal development, project budgeting, and project management.

A limited number of graduate assistantships and work-study positions are available to qualified UCI students who wish to participate in PPRO research projects, including data collection and analysis in the Center for Survey Research, or the preparation of research proposals.

Irvine Research Units

Irvine Research Units (IRU) are established on the Irvine campus for the purpose of providing an organizational structure for the conduct of research that is difficult or infeasible to be carried out within the normal school or departmental structure. Irvine Research Units normally are established for a period of five years, and may provide the basis for establishment of extramurally supported research centers or Organized Research Units. Currently established Irvine Research Units include Animal Virology, Brain Aging, Combustion and Propulsion Science and Technology, Computer Systems Design, Global Peace and Conflict Studies, Mathematical Behavioral Sciences, Molecular Neurobiology, and Software.

Animal Virology

Faculty participants in this program are from the Department of Molecular Biology and Biochemistry in the School of Biological Sciences and from the Department of Microbiology and Molecular Genetics in the College of Medicine. The goal of the program is to provide a core facility for the collaborative interaction among faculty researchers working in several related areas of virology. A major activity is the development of communication between virologists in the UCI community and their colleagues at other institutions.

Brain Aging

The IRU in Brain Aging is an integrated and interdisciplinary clinical and research program focused on the basic mechanisms of age-related neurodegenerative diseases, their diagnosis, and treatment. The program includes both an Alzheimer's Disease Diagnostic Treatment Center and a basic research program, thus providing a unique bridge between clinical medicine and research that enhances the advancement of knowledge and technique in both areas. Research currently focuses on the role of synaptic plasticity in successful aging and enhancing function during the course of Alzheimer's disease, the study of the properties of learning and memory in humans and parallel animal models, the development of peripheral markers for Alzheimer's disease to diagnose and monitor its course, and the use of brain imaging methods for diagnosis and research. The program also houses a tissue repository; provides research training and outreach; sponsors workshops, conferences, and seminars; and offers a postdoctoral fellowship program.

Participants in this program include faculty from the Departments of Neurology, Radiology, Pediatrics, Microbiology and Molecular Genetics, Psychiatry and Human Behavior, and Surgery in the College of Medicine; the Departments of Psychobiology and Molecular Biology and Biochemistry in the School of Biological Sciences; the Department of Chemistry in the School of Physical Sciences; and the School of Social Sciences.

Combustion and Propulsion Science and Technology

Participants in the IRU in Combustion and Propulsion Science and Technology include faculty, students, and staff in the Department of Mechanical and Aerospace Engineering, School of Engineering; the Department of Chemistry, School of Physical Sciences; and the Department of Community and Environmental Medicine, College of Medicine. The goals of the IRU are to (1) develop a more complete understanding of the physiochemical processes of combustion and propulsion with particular emphasis on turbulent transport, liquid sprays, two-phase particle flows, high-speed and supersonic mixing, laser diagnostics, chemistry-turbulence interaction, and advanced computational methods;

(2) establish relationships between these processes and potential health and environmental impacts associated with soot particulate and gaseous pollutant emissions; and (3) apply this understanding to applications of technological importance.

The IRU in Combustion and Propulsion Science and Technology promotes interaction, provides a broader portfolio of research experiences and opportunities to graduate and undergraduate students, sponsors a seminar series and workshops, and supports a visitors program to enhance interaction with distinguished scientists from both industry and academia.

Computer Systems Design

The IRU in Computer Systems Design includes faculty from the Department of Information and Computer Science and the Department of Electrical and Computer Engineering in the School of Engineering who are interested in methodologies, tools, and designs of complex computer systems. Faculty and students are involved in a variety of projects in parallel processing, algorithms, software tools, parallel compilers, distributed computing, networking, real-time systems, VLSI architecture, computer-aided design, estimation, fault tolerant and highly reliable systems, and science of design.

The goal of the IRU is to provide a broad spectrum of research opportunities for graduate and undergraduate students and to foster greater cooperation between the University and industry in solving related problems.

Global Peace and Conflict Studies

Participants in the IRU in Global Peace and Conflict Studies include faculty from the School of Social Sciences, the School of Humanities, and Program in Social Ecology. The goals of the IRU are: (1) interdisciplinary research on the international and domestic conditions necessary for the avoidance of war or civil strife, and the creation of a stable and fruitful peace; (2) education of graduate and undergraduate students about these conditions; (3) enhancement of international studies in general at UCI; and (4) dissemination of research and educational contribution to the community at large.

Five interconnected themes on the cutting edge of contemporary scholarship characterize the cross-disciplinary research of the cooperating faculty: the interaction of foreign policy and domestic affairs, the strategy and ethics of armament and disarmament, the role of international organizations in the creation of a more enduring peace, global ecological and environmental factors in peace and conflict, and human attitudes and perceptions with respect to peace and conflict.

Mathematical Behavioral Sciences

The goals of the Mathematical Behavioral Sciences research unit are to foster research in the application of mathematical methods to model and to better understand human behavior, both individual and social. The unit sponsors specialized seminars and colloquia, a visiting scholars program, summer workshops, and focused research subteams of faculty, students, and visitors. Participants include faculty from the Departments of Cognitive Science, Economics, Politics and Society, Anthropology, and Sociology in the School of Social Sciences; the School's Mathematical Social Science group; the Department of Mathematics in the School of Physical Sciences; the Department of Philosophy in the School of Humanities; and the Graduate School of Management.

Molecular Neurobiology

Faculty participants in this program are from the Departments of Biological Chemistry, Anatomy and Neurobiology, and Pharmacology in the College of Medicine. The group's goal is to pool

their expertise and focus on the investigation of the major human neurodegenerative diseases, namely Alzheimer's, Huntington's, and Parkinson's, and the investigation of the nature of neuro-oncogenesis, the fundamental mechanisms of which are likely to yield clues to understanding why brain cells degenerate.

Software

The goal of the IRU in Software is to advance the state of the art and the state of the practice in computer software. The program aims to develop and extend fundamental understandings, advanced technology, sophisticated tools, and facilities for assessing reliable, large-scale, and complex software systems. The IRU carries out its mission by fostering world-class research within the University, and also by increasing inter- and intra-departmental and campus research projects, and by establishing research and technology transfer ties between UCI and major California software companies.

Focused Research Programs

Focused Research Programs (FRP) are established for the purpose of developing and, for a limited period of time, sustaining interdisciplinary research that could not be carried out through individual effort or within a single academic unit. Because of the developmental nature of these programs, they ordinarily are approved for no more than three years and are supported partly by University funds. If a research program develops successfully, it may continue with extramural and/or University support. Three groups of faculty, students, and other researchers currently are recognized as Focused Research Programs.

East Asian Studies

Faculty participants in this program are from the Department of Art History in the School of Fine Arts; the Departments of East Asian Languages and Literatures and of History in the School of Humanities; and the School of Social Sciences. The goal of this program is to evaluate related aspects of state formation, social change, and self-expression in order to identify both distinctive aspects of East Asian civilizations and phenomena shared by many societies.

Public Choice

Faculty from the Departments of Economics and of Politics and Society in the School of Social Sciences; the Graduate School of Management; and the Department of Philosophy in the School of Humanities apply economic concepts to the study of government behavior. The research topics include governmental policy on research and development and on health, the importance of race in politics, and the need for government-given alternative motivations of individuals.

Scientific Explanation

This program is concerned with the nature of scientific explanation, and in particular, the scientific explanation of behavior. Participants include faculty from the Schools of Biological Sciences and Social Sciences and the Departments of English and Comparative Literature, History, and Philosophy in the School of Humanities. The goals of the FRP are to (1) articulate, for group discussion, the major established accounts in the literature of the logic of scientific explanation; (2) examine concrete examples of scientific explanation; and (3) articulate and criticize detailed work on the development of particular accounts of scientific explanation, and of the relation between scientific explanation and scientific understanding.

Graduate Education

With the exception of programs conducted by the College of Medicine for the training of medical professionals, the Dean of Graduate Studies administers graduate education in accordance with academic policies established by the Academic Senate and by the Graduate Council, a standing committee of the Irvine Division of the Academic Senate. There is no separate graduate faculty at UCI; graduate work is supervised by academic units and faculties which have concurrent responsibility for undergraduate studies.

A great deal of information about graduate education at UCI is published in the *UCI General Catalogue* and individual graduate program publications. The staff of the Office of Research and Graduate Studies is ready to help 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 Office is located in 145 Administration Building; telephone (714) 856-6761.

Through the Graduate and Professional Opportunity Program (GPOP), steps are taken to increase the participation of traditionally underrepresented minorities (including women and Asian-Americans in designated fields) in the graduate academic and professional programs of the University. Appropriate assistance is offered during the admission process, and every effort is made through GPOP advising and support to ensure that all students will have a reasonable chance to attain their academic objectives.

Admission to Graduate Standing

Applicants for admission to graduate study at UCI must apply for acceptance into a specific graduate program to work toward an 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 a recognized academic institution. A grade point average of at least B (3.0 on a 4.0 scale) is required.

Each applicant's file is evaluated by the admissions committee of the specific graduate program on the basis of such factors as academic subject preparation, scholarship, letters of recommendation, test scores, and examples of previous work. A critical question is whether the applicant's academic objectives can reasonably be satisfied by a graduate program on this campus. The University of California does not have the capacity to accommodate all applicants who meet the minimum admission requirements.

Application Procedures

How to Apply

Applicants must complete the Application for Admission which may be obtained by contacting individual graduate programs or the Office of Research and Graduate Studies. The application must be submitted on the forms supplied by UCI and accompanied by a check, draft, or money order payable to Regents-UC in the exact amount of the \$40 Application Fee. This fee is not refundable. Application fee waivers are available for needy domestic students and targeted underrepresented minority applicants; students may be asked to provide verification of ethnicity. Detailed instructions on how to complete the application are contained in the application packet.

When to Apply

For all graduate programs, applications should be completed by February 1 to receive full consideration for fellowship and assistantship awards. Some academic units will accept applications for winter or spring quarter admission for which deadlines are 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 test scores must be received before the published deadlines. Applications for admission received after the published deadline for the quarter requested will be deferred automatically to the next open quarter.

Required Supporting Documents

Letters of Recommendation

Applicants should arrange to have three letters of recommendation forwarded directly to their prospective major department or program. Recommendation forms are enclosed in the application packet. Only one set of 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 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 exceptions: (1) the Graduate School of Management prefers that applicants take the Graduate Management Admission Test (GMAT), and (2) no tests are required of those who seek the Master of Fine Arts degree, the Master of Arts in Teaching, or California education credentials. There is no minimum GRE score. Several programs also require, or strongly recommend, that an applicant report the score of a GRE Subject Test. 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 five times a year in the United States and in 96 other countries. In addition, several administrative service tests are given each year in major U.S. cities (dates vary). Applications for the GRE may be obtained from the Educational Testing Service, P.O. Box 6000, Princeton, New Jersey 08541-6000.

Academic Records

Domestic applicants should request that official transcripts be forwarded directly to their prospective major department or program. Two complete sets of official records covering all postsecondary academic work attempted, regardless of length of attendance, are required. University of California transcripts must also be submitted by applicants including those who are UCI undergraduates. 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 major department or program at UCI. Records of academic study from foreign institutions must be official, bearing the 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.

Test of English as a Foreign Language (TOEFL)

All applicants whose primary language is not English are required to submit the test results of the TOEFL examination. The TOEFL examination should be taken at the earliest available date to allow for scores to be reported in time to meet the application deadlines. A score of 550 or better is required for admission consideration. Arrangements for taking the TOEFL may be made through the nearest United States Embassy or by writing to the Educational Testing Service, P.O. Box 6151, Princeton, New Jersey 08541-6151, U.S.A.

Test of Spoken English (TSE)

All applicants whose primary language is not English and who wish to be considered for a Teaching Assistantship appointment must undergo and submit results for the Test of Spoken English (TSE). A minimum score of 220 is required in order for a TA offer to be made. (The Departments of English and Comparative Literature and Politics and Society require a minimum score of 250.) The Test of Spoken English is given six times during the year at TOEFL test centers around the world. Information on taking the TSE may be obtained by writing to the Test of Spoken English, P.O. Box 6157, Princeton, New Jersey 08541-6157, U.S.A.

Special Note to Foreign Applicants

Foreign applicants are 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 Foreign Applicant Questionnaire for the purpose of verifying the amount and source of funds available for graduate study will be forwarded to foreign applicants upon receipt of the completed Application for Admission. The required financial verification must be provided before visa forms 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. Information on registration dates and procedures will be mailed to new applicants prior to the registration cycle.

If any applicant wishes to defer admission to a later academic quarter, the Office of Research and Graduate Studies must be notified in writing. After formal admission has been offered, a request for deferral must be approved by the academic unit.

Limited Status

University of California academic regulations provide for the admission of students to Limited Status for two purposes: (1) to prepare for admission to a graduate or professional program by enrolling for a prescribed set of courses; or (2) to pursue a specific academic program which does not lead to a graduate degree. While Limited Status is intended to serve a broad range of educational objectives, the most common objective for which the Dean of Graduate Studies offers Limited Status admission is study leading to California education credentials. The general requirements for admission to Limited Status are the same as those for graduate admission, with the exception that Graduate Record Examination scores are not required. Admission to Limited Status is ordinarily for a period of three quarters (one academic year) and does not imply admission to a UCI graduate degree program at some later date.

Although Limited Status does not represent graduate standing, admission is offered by the Dean of Graduate Studies upon the recommendation of an academic unit which has agreed to oversee the student's program. Graduate courses taken while in Limited Status ordinarily qualify for transfer credit toward advanced degree requirements, but will not satisfy minimum degree or residency requirements for any UC graduate program to which the student eventually might be admitted.

Academic Advising

In each academic unit with an advanced degree program, there is at least one formally appointed graduate advisor or director of graduate studies. The graduate 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 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 of the Office of Research and Graduate Studies, approving study lists, and evaluating academic petitions. In many academic units the graduate 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 and deans are important links between the student and the Dean of Graduate Studies.

Most graduate students also will have an individual faculty advisor or advising committee, especially after the first year of advanced 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 Graduate 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 of importance to graduate students are covered in the Academic Regulations and Enrollment and Other Procedures sections, and in the description of each graduate program.

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, and to maintain a satisfactory grade point average for all work undertaken while enrolled in graduate study. 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, upon petition, a UCI course in which a grade of B- is earned may be accepted 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 or 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. 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. Formal candidacy for an advanced degree, degrees conferred, certain examinations passed, unit credit accepted from other institutions, and other important academic information is recorded also.

A graduate student who has not demonstrated satisfactory progress is not eligible for any academic appointment such as Reader, Graduate Student Researcher, or Teaching Assistant, and may not hold a fellowship or other award which is based upon academic merit.

Grading

With the consent of the academic units involved, individual study and research courses at the graduate level may be graded Satisfactory or Unsatisfactory (S/U). With the approval of the Graduate Council certain graduate courses are graded S/U only. A grade of S is equivalent to a grade of B (3.0) or better. No credit is given for a course in which a grade of U was assigned.

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.

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. Although Incomplete grades do not affect a graduate student's grade point average, they are an important factor in evaluating academic progress. 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, ordinarily 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.

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. After one quarter, an NR becomes an F or NP which will remain permanently upon 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.

Academic Disqualification

After consultation with the student's academic unit, the Dean of Graduate Studies may disqualify a student who has a grade point average in graduate and upper-division courses below 3.0 for two or more successive quarters; or fails to pass (or does not take) a required examination within the time specified for that graduate program; or does not maintain satisfactory academic progress toward completion of an approved program of study.

Unsatisfactory academic progress may be determined on the basis of explicit requirements, 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 will 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 Graduate Studies 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 written notice of academic disqualification by the Dean of Graduate Studies, disqualification will be noted on the formal academic record of that student. Following the formal notice of disqualification, the student may appeal to the Dean of Graduate Studies only on the basis of procedural error.

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 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 ordinarily is expected of graduate students at the University of California. 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 both the student's Graduate Advisor and the Dean of Graduate Studies.

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. Under this policy, part-time enrollment at the graduate level is defined as enrollment for eight units or less, including enrollment in physical education classes. Within the guidelines and limitations on the application form available in the Office of Research and Graduate Studies, graduate students may petition for part-time status and, if the petition is approved, shall pay the full University Registration Fee and student activities fees, one-half the Educational Fee, and one-half the Nonresident Tuition Fee (if applicable).

Continuous Registration

A graduate student is expected to enroll 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. Enrollment is not official 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. For more information, see the Enrollment and Other Procedures section.

A student engaged in study or research outside the State of California for an entire quarter ordinarily will 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 Graduate Studies, a student who does not register by the final deadline for any regular quarter will lose graduate standing, and candidacy for any advanced degree will lapse. Prior to resuming graduate study in the University, a former student must successfully apply for readmission. A readmitted student must register and then be advanced or reinstated to candidacy at least one quarter before receiving an advanced degree. A degree cannot be conferred earlier than the second quarter following readmission.

A graduate student who decides to leave the University after enrolling and paying fees for a quarter must file an official Notice of Withdrawal or Cancellation with the Dean of Graduate Studies. A graduate student in good academic standing who withdraws from graduate study and intends to return within one year may submit 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.

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 Graduate Studies 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 comparable University employment. 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 Graduate Studies). Leave may not be granted to students who intend to make use of most University resources or facilities (including housing), and it may be revoked if they do so.
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 an Application for Admission with a \$40 fee, which is nonrefundable. The Dean of Graduate Studies 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 Graduate Studies. 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.

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 year 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. 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 obtained from the Office of Research and Graduate Studies and should be filed with the Office at least four weeks before the beginning of the quarter in order to avoid penalties for late filing of the study list.

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. 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 Graduate Studies. 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 Graduate Studies. No transfer credit will be given for any course in which a grade below B or equivalent was assigned.

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 Graduate Studies 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, a thesis; or Plan II, a comprehensive examination. 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 School of Fine Arts (M.F.A. in Fine Arts, Dance, Drama, or Studio Art) and by the Program in 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 secondary school teachers and college instructors. 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 Graduate School of Management upon successful completion of the equivalent of two years of full-time study in the development of professional managerial skills.

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.

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 appointed by the Dean of Graduate Studies on behalf of the Graduate Council. The proposed candidacy committee list must be submitted to the Office of Research and Graduate Studies (on the Ph.D. Form I) at least two weeks before the final qualifying examination is to be given so that formal appointment can be made before the examination date. The Report on Qualifying Examination for the Degree of Doctor of Philosophy (Form II) must be signed by the committee at the time the candidacy examination is concluded and submitted to the Dean of Graduate Studies. Following a unanimous favorable vote of the committee, the student will be advanced to candidacy upon payment of the \$25 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 appointed by the Dean of Graduate Studies (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, and will be open to all members of the academic community. 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. 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 Graduate Council, a copy of the dissertation (two copies of a master's thesis) must be filed for placement in the UCI Library. The final copy must meet the University's requirements for style, format, and appearance before the degree can be conferred. Dissertations and theses must be filed by the deadline published in the quarterly *Schedule of Classes* in order for them to be reviewed and accepted in time for the degree to be conferred in that quarter.

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, subject to the approval of the Dean of Graduate Studies. 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. The student who intends to make use of any University resource, to hold any academic appointment or comparable University employment, or to receive any student service for which official registration and payment of regular fees is a requirement is not eligible to pay the Filing Fee in lieu of registration. A Filing Fee will not be accepted immediately following readmission and will be accepted immediately following a leave of absence only under exceptional circumstances. The date for payment of the Filing Fee without a late service fee is the same as that for the payment of other student fees. If all degree requirements are not completed during the quarter in which the Filing Fee is paid, the student must subsequently register and pay all applicable fees.

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 Graduate Studies. The student should consult the departmental 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, student loans, and work-study. Applicants interested in assistantships or fellowships should so indicate on their application when applying for admission.

For all graduate programs, applications should be completed by February 1 to receive full consideration for fellowship and assistantship awards. Continuing students interested in an assistantship or fellowship should contact the Graduate Advisor for their program. The awarding of fellowships for the following academic year begins in the winter quarter.

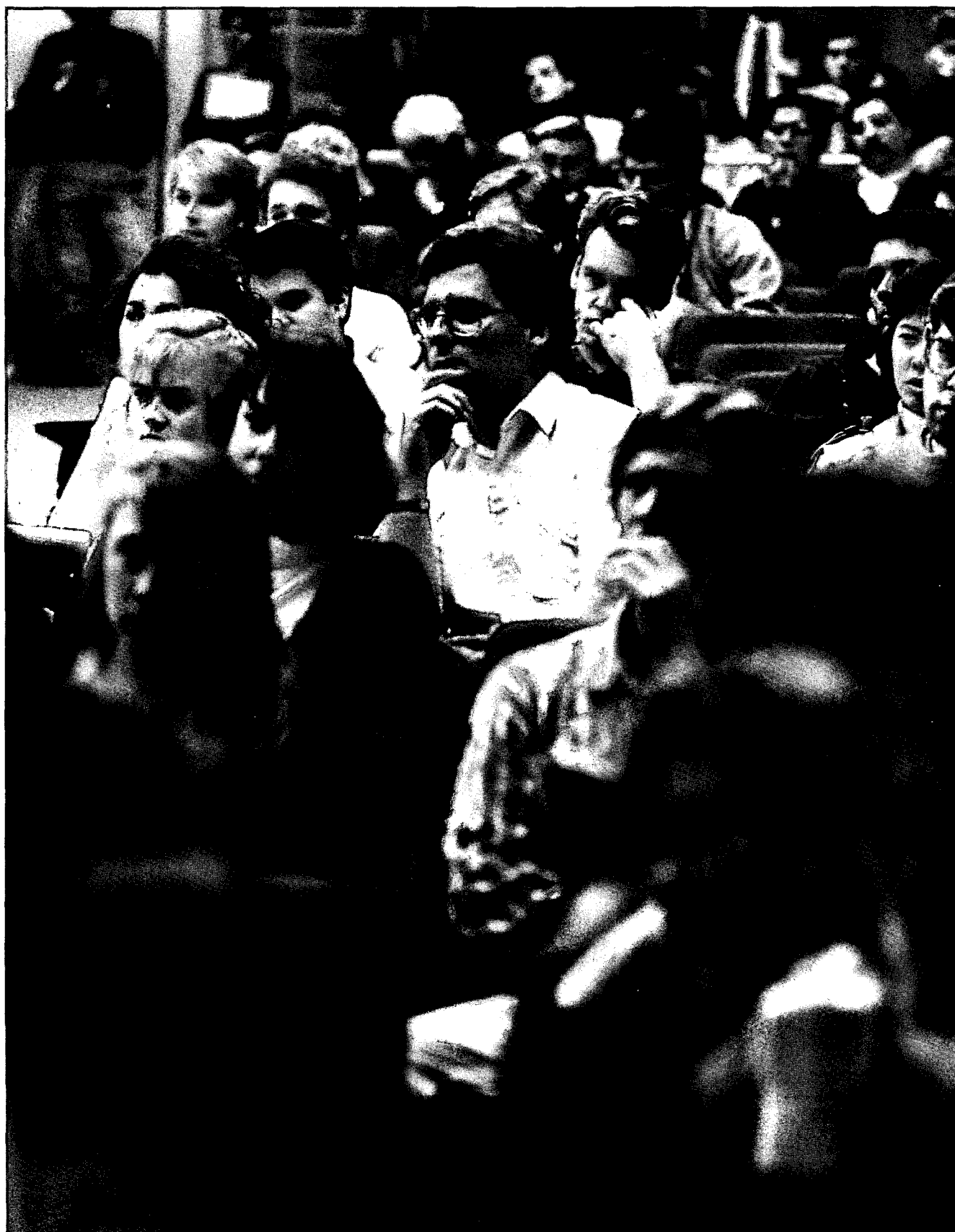
UCI subscribes to the agreement of the Council of Graduate Schools of the United States, under which successful applicants for awards of financial support are given until April 15 to accept or decline such awards. An award accepted from one of the member universities may be resigned at any time through 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' and UCI Chancellor's Fellowships are awarded 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.

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.

Through the Graduate and Professional Opportunity Program, a number of fellowships and assistantships are awarded to entering and continuing graduate students from groups including minorities and women in certain fields who traditionally have been underrepresented in higher education in the United States. All fellowship awards and assistantships appointments are made in accordance with the affirmative action policies of the University.

The Expenses and Fees and the Financial Aid sections in this *Catalogue* contain information about assistance based upon financial need that is administered by the Financial Aid Office including grants, loans, and work-study awards. A financial aid booklet is available from the Financial Aid Office.



UCI offers programs leading to doctoral or master's degrees in more than 100 academic disciplines and professional areas ranging from acting to developmental biology to urban planning.

School of Biological Sciences

Hung Fan, **Dean (Acting)**

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Graduate Programs: (714) 856-4581

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This Biological Sciences major, under the direction of Assistant Professor of Molecular Biology and Biochemistry Anthony James, is engaging in research focusing on ways to genetically alter insects that transmit malaria and yellow fever.

- Robert K. Josephson, Ph.D. University of California, Los Angeles, *Professor of Biological Sciences*
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- Arnold Starr, M.D. New York University, *Professor of Neurology and Psychobiology*
- Robert Steele, Ph.D. Yale University, *Assistant Professor of Biological Chemistry and Biological Sciences*
- Grover C. Stephens, Ph.D. Northwestern University, *Professor of Biological Sciences*
- Katumi Sumikawa, Ph.D. Imperial College, London (England), *Assistant Professor of Biological Sciences*
- John E. Swett, Ph.D. University of California, Los Angeles, *Professor of Anatomy and Neurobiology and Biological Sciences*
- Paul S. Sypherd, Ph.D. Yale University, *Vice Chancellor for Research, Dean of Graduate Studies, and Professor of Microbiology and Molecular Genetics and Biological Sciences*
- Krishna K. Tewari, Ph.D. Lucknow University, *Chair of the Department of Molecular Biology and Biochemistry and Professor of Biological Sciences*
- Sujata Tewari, Ph.D. McGill University, *Associate Professor of Psychiatry and Human Behavior and Biological Sciences*
- Yasuhiro Torigoe, Ph.D. State University of New York, *Assistant Adjunct Professor of Anatomy and Neurobiology and Biological Sciences*
- Marcel Verzeano, M.D. University of Pisa Medical School (Italy), *Professor Emeritus of Psychobiology*
- Larry E. Vickery, Ph.D. University of California, Santa Barbara, *Professor of Physiology and Biophysics, Biological Chemistry, and Biological Sciences*
- Luis P. Villarreal, Ph.D. University of California, San Diego, *Professor of Biological Sciences*
- Edward K. Wagner, Ph.D. Massachusetts Institute of Technology, *Professor of Biological Sciences*
- Robert C. Warner, Ph.D. New York University, *Professor Emeritus of Biochemistry*
- John J. Wasmuth, Ph.D. Purdue University, *Professor of Biological Chemistry, Pediatrics, and Biological Sciences*
- Norman M. Weinberger, Ph.D. Western Reserve University, *Professor of Biological Sciences*
- Arthur E. Weis, Ph.D. University of Illinois, *Associate Professor of Biological Sciences*
- Stephen G. Weller, Ph.D. University of California, Berkeley, *Associate Professor of Biological Sciences*
- Stephen H. White, Ph.D. University of Washington, *Professor of Physiology and Biophysics and Biological Sciences*
- Clifford A. Woolfolk, Ph.D. University of Washington, *Associate Professor of Biological Sciences*
- Pauline I. Yahr, Ph.D. University of Texas, *Professor of Biological Sciences*

No one can predict the future, but this much is known: the next quarter century is the time of the biologist, who will be in the forefront of the most challenging, intellectual problems, such as understanding the most elemental building blocks of the mechanisms of life, the mechanisms of memory and of learning, the molecular basis of embryonic development, and the rules that help predict the behavior of the environment. Biology also lies at the heart of major social problems that face the human race in the coming decade, such as sensible management of the environment and the effective control of human populations. It is vital that educated people understand the contributions that biological sciences have made and will continue to make for the future welfare of human beings.

The School of Biological Sciences reflects new concepts of biology in both its curriculum and its research programs. The faculty is dedicated to providing students with the opportunity to learn the principles and facts in this ever-expanding field of biology. The curriculum is designed to meet present and future educational needs of majors and nonmajors. In keeping with the responsibilities of the University, the School encourages vigorous faculty and student research programs. It strongly believes that excellence in research is essential for effective, enthusiastic, and up-to-date teaching. The School provides an excellent opportunity for undergraduates to participate in research, through the Biological Sciences 199 program. Each quarter more than 450 undergraduate students and 200 graduate and postdoctoral students participate in independent research programs.

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 biological sciences are presented as an integrated area of study through the eight-quarter Biological Sciences Core, with lectures and laboratories developing the major concepts of modern biology. Satellite courses expand upon and intensify areas covered in the Core and provide students with the opportunity to specialize in a particular area of the biological sciences. In addition to the regular major in Biological Sciences, a concentration in Ecology and Environmental Biology, also leading to a B.S. degree in Biological Sciences, is available at the undergraduate level. The degree requirements of these two programs are similar, with the concentration in Ecology and Environmental Biology placing a greater emphasis on ecology and the natural sciences and a lesser emphasis on chemistry and molecular biology. Introductory courses for nonmajors are designed to make the biological sciences meaningful and interesting and to inform intelligent citizens of biological phenomena that affect their daily lives. Graduate courses are offered in all the departments.

Students should be aware that psychology courses are offered in several different departments and programs. Students interested in the biological mechanisms of behavior are advised to consult the course listings in the School of Biological Sciences section. Students interested in developmental, clinical, environmental, health, or social psychology, or in psychology and the law, are advised to consult the course listings in the Program of Social Ecology section. Students interested in human experimental psychology as applied to the study of sensation, perception, learning, and cognitive processes are advised to consult the course listings in the Department of Cognitive Sciences in the School of Social Sciences section.

Students with an interest in the application of ecology to human needs may choose the Applied Ecology major, leading to a B.A.

degree in Applied Ecology, which is offered jointly by the School of Biological Sciences and the Program in Social Ecology.

Degrees

Biological SciencesB.S., M.S., Ph.D.

A concentration in Ecology and Environmental Biology is available at the undergraduate level. Opportunities are available at the graduate level to specialize in developmental and cell biology, ecology and evolutionary biology, molecular biology and biochemistry, psychobiology, anatomy and neurobiology, microbiology and molecular genetics, and physiology and biophysics.

Applied Ecology (offered jointly with the Program in Social Ecology)B.A.

Honors

Graduation with Honors. Of the graduating seniors, approximately 12 percent may receive honors: 1 percent *summa cum laude*, 3 percent *magna cum laude*, and 8 percent *cum laude*. The selection for these awards is based on winter quarter rank-ordered grade point averages. A general criterion is that students must have completed at least 72 units in residence at a University of California campus.

Biological Sciences Scholastic Honor Society. The Biological Sciences Scholastic Honor Society is composed of students who graduate with an overall grade point average of 3.5 or better and have carried 12 or more graded units with a grade point average of 3.5 per quarter for a minimum of six quarters. Their names will be inscribed on a permanent plaque in the Biological Sciences Student Affairs Office.

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.

Dean's Academic Achievement and Service Awards. Four Biological Sciences majors will be the recipients of the Dean's Academic Achievement and Service Awards. These awards are based on academic excellence and exceptional service to the School of Biological Sciences.

Excellence in Research Award. Undergraduates who have successfully completed the requirements for this program are presented with Excellence in Research certificates.

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.

Lisa E. George Memorial Scholarship. The Lisa E. George Memorial Scholarship has been established by Delta Sigma Theta, Inc., and the School of Biological Sciences to assist women Biological Science majors who are from a recognized underrepresented minority group. The recipient must demonstrate academic excellence, leadership, service to the community, financial need, and a commitment to the pursuit of higher education.

Ralph W. Gerard Award. Three students receiving the highest ratings for their papers and oral presentations at the Excellence in Research Program will receive the Ralph W. Gerard Award.

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.

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.

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.

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.

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.

Edward A. Steinhilber Memorial Award. The Edward A. Steinhilber Memorial Award is given to an outstanding graduate Teaching Assistant. Three second-place awards also are given.

Special Service Awards. These awards are given to students who have demonstrated great service to the School, the University, and/or community.

The preceding Honors, Scholarships, Prizes, and Awards are presented at the annual Biological Sciences Honors Convocation held the first week of June.

Requirements for the B.S. Degree in Biological Sciences

University Requirements: See pages 50–53.

School Requirements

Biological Sciences Core Curriculum (90, 101, 102, 103, 103L, 104, 104L, 105, 105L, 106, 106L, 107); minimum of three satellite courses (see School Residence Requirement below); Chemistry 1A-B-C, 51A-B-C, and 1LB-LC, 51LA-LB; Mathematics 2A-B-C or 2A-B and 7; Physics 3A-B-C, 3LA-LB or 5A-B-C, 5LB-LC; and Humanities 1A-B-C, or another option of the lower-division writing requirement of the breadth requirement (Category I) and a three-quarter sequence in either Humanities or Literature (Category IV, Humanistic Inquiry).

Students must have a 2.0 cumulative grade point average in the Biological Sciences Core Curriculum and three satellite courses. Prerequisites for all Biological Sciences Core courses are rigorously enforced.

School Residence Requirement: At least three satellite courses must be successfully completed at UCI.

In addition to the listed Biological Sciences satellite courses, Chemistry 130A-B-C or 131A-B-C can be used to satisfy the satellite requirement. Students with a double major in Psychology and Biological Sciences can also use Psychology 112A-B-C to satisfy the satellite requirement.

No student may enter as a double major, but students interested in other areas may possibly 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.

UCI Breadth Requirement

Those students majoring in Biological Sciences who have completed the School requirements and who have passed any two quarters of the writing component of the Humanities Core or its alternative with a grade of C or better will have satisfied the UCI breadth requirement, with three exceptions: the upper-division writing requirement; Category III, Social and Behavioral Sciences; and Category VII, Multicultural and International/Global Studies.

Specifically, the Humanities Core Course (Humanities 1A-B-C) or its alternative satisfies Category IV, Humanistic Inquiry; it also satisfies the lower-division writing requirement when two quarters of the writing component are passed with a grade of C or better. Chemistry and physics satisfy Category II, Natural Sciences. Category V, Foreign Language, Linguistics, Logic, Mathematics, and Computer Science, is satisfied by completion of the School mathematics requirement.

Planning a Program of Study

Since biological sciences courses are built upon a base of the physical sciences, it is important for students to take their required physical sciences early. The academic program shown

Sample Program — Biological Sciences

	Freshman	Sophomore	Junior	Senior
Fall	Chemistry 1A Humanities 1A ^a Bio. Sci. 2 (Freshman Seminar)	Bio. Sci. 101 Chemistry 51A, LA Mathematics 2A ^c	Bio. Sci. Core Physics 3A, LA or Elective ^d Bio. Sci. Satellite ^e Elective/Research	Bio. Sci. Core Bio. Sci. Satellite Research Elective
Winter	Bio. Sci. 90 ^b Chemistry 1B, LB Humanities 1B	Bio. Sci. 102 Chemistry 51B, LB Mathematics 2B	Bio. Sci. Core Physics 3B, LB or Elective Bio. Sci. Satellite Elective/Research	Bio. Sci. Core Research Electives
Spring	Chemistry 1C, LC Humanities 1C	Bio. Sci. 103, 103L Chemistry 51C Mathematics 2C or 7	Bio. Sci. Core Physics 3C or Elective Bio. Sci. Satellite Elective/Research	Bio. Sci. Core Research Electives

^a Students may replace Humanities 1A-B-C with another option of the lower-division writing requirement of the breadth requirement (Category I) and a three-quarter breadth sequence in either Humanities or Literature (Category IV, Humanistic Inquiry). Students must satisfy the Subject A requirement prior to fulfilling the lower-division writing requirement. Students taking Humanities 1A must enroll in the Subject A section of this course if they have not satisfied the Subject A requirement.

^b Biological Sciences 90 is offered all three quarters.

^c Students who have completed mathematics in their freshman year may take Physics 3A-B-C and 3LA-LB-LC in their sophomore year. Students who take the mathematics requirement in their sophomore year should defer physics to their junior year. Physics 3A-B-C is the course for nonmajors and is fully acceptable for a degree in the Biological Sciences. Physics 5A-B-C, which begins in the winter quarter, better prepares a student for Physical Chemistry 130A-B-C or 131A-B-C and for some graduate schools.

^d Electives should be chosen with the following purposes in mind: UCI breadth requirements; students' own breadth; preprofessional training.

^e In addition to the listed biological sciences satellite courses, Chemistry 130A-B-C or 131A-B-C, and Psychology 112A-B-C (for Biological Sciences/Psychology double majors) are counted as satellites.

is only a suggested program. Students should consult the Biological Sciences Student Affairs Office for individual academic planning.

Freshmen will normally take eight units of the humanities requirement, Chemistry 1A, and a freshman seminar (Biological Sciences 2) during the fall quarter. Students with a score of 650 or higher on the mathematics part of the Scholastic Aptitude Test (SAT) may enroll in mathematics during the fall quarter and should note the prerequisites for Mathematics 2A. During their freshman year, students will begin the Biological Sciences Core with Biological Sciences 90. This is normally the only Biological Sciences Core class taken in the first year.

Sophomores begin organic chemistry (Chemistry 51A), continue the Biological Sciences Core, and complete the Humanities requirement if they have not taken it during their freshman year. Sophomores often begin taking courses in other schools to meet the UCI breadth requirement and fulfill their mathematics requirement if they have not done so as freshmen. Sophomores who have completed the mathematics requirement as freshmen may enroll in physics. Students who intend to double major in Chemistry may be required to take Physics 5A-B-C in place of Physics 3A-B-C.

During their junior year, most majors continue the Biological Sciences Core and take physics if they have not yet done so. Juniors complete their breadth requirements and often become involved in the satellite course requirements and research. Since research and the content of most satellite courses are based upon material contained in the Core, it is usually preferable for students to have completed most of the Core before taking satellite courses or beginning their research.

Finally, during their senior year, students complete the Core, continue their research, and become involved in an area of specialization within the School.

Individualized accelerated programs of study are designed for students entering the School with strong backgrounds in biology. See the following section on the Freshman Honors Curriculum.

A special program of study should be considered by students who enter the biological sciences with a weak background in the sciences and in writing skills. A weak background might consist of not completing high school chemistry or mathematics through trigonometry, and not satisfying the Subject A requirement before

entering the University. This program allows a student to gain the necessary background skills and may require five years of study at the undergraduate level. Before beginning this program of study, students must see an academic counselor in the Biological Sciences Student Affairs Office.

Freshmen should complete English and Comparative Literature WR39A, Mathematics 1, Biological Sciences 2, and an additional humanities course (to satisfy the alternative to the Humanities Core) during the fall quarter. The winter quarter should include Biological Sciences 90 and continuation of humanities and mathematics. Continuation of humanities and mathematics, and Chemistry 10, are taken during the spring quarter.

During the second year, students should begin general chemistry (Chemistry 1A-B-C), continue working on the breadth requirement and any remaining humanities requirements, and complete mathematics.

The Biological Sciences Core, organic chemistry (Chemistry 51A-B-C), and elective courses should be taken during the third year.

The fourth year should include Physics 3A-B-C, continuation of the Biological Sciences Core, biological sciences satellites, and possibly research or other electives.

The fifth year should be relatively free to explore additional satellites and research and to complete any remaining Biological Sciences Core Courses.

Requirements for the B.S. Degree in Biological Sciences with a Concentration in Ecology and Environmental Biology

The School of Biological Sciences offers a concentration in Ecology and Environmental Biology which provides a second pathway to a B.S. degree in Biological Sciences. The concentration in Ecology and Environmental Biology differs from the regular undergraduate program in having a greater emphasis on ecology and the natural sciences and a lesser emphasis on chemistry and molecular biology. Its principal objective is to afford the student an integrated, interdisciplinary program in environmental studies within the framework of a broad and rigorous physical and biological sciences background. A vital goal is to allow the student completing the course of study to be broadly trained as a biologist, with the breadth of educational experience to view environ-

Sample Program — Ecology and Environmental Biology Concentration

	Freshman	Sophomore	Junior	Senior
Fall	Bio. Sci. 2 (Seminar) Chemistry 1A Humanities 1A ^a	Bio. Sci. 101 Chemistry 51A, LA Mathematics 2A Elective ^d	Bio. Sci. Core Bio. Sci. 166 Physics 3A, LA or Elective	Bio. Sci. Core Required Elective ^d Required Elective Elective
Winter	Bio. Sci. 90 ^b Chem 1B, LB Humanities 1B	Bio. Sci. 102 Chemistry 51B, LB Mathematics 2B	Bio. Sci. Core Bio. Sci. 120 Physics 3B, LB or Elective Breadth	Bio. Sci. Core Required Elective Elective Elective
Spring	Chemistry 1C, LC Humanities 1C	Bio. Sci. 103, 103L ICS 1A or 2I Mathematics 7	Bio. Sci. Core Physics 3C or Elective Breadth	Bio. Sci. Core Required Elective Elective Elective

^a Students may replace Humanities 1A-B-C with another option of the lower-division writing requirement of the breadth requirement (Category I) and a three-quarter breadth sequence in either Humanities or Literature (Category IV, Humanistic Inquiry). (See School requirements for regular Biological Sciences majors and footnote "a" from the sample program for regular Biological Sciences majors.)

^b Biological Sciences 90 is offered all three quarters.

^c Electives should be chosen with the following purposes in mind: UCI breadth requirements; students' own breadth; preprofessional training.

^d Required electives are two courses selected from among various Biological Sciences courses and two courses selected from among various Social Ecology and Engineering courses. See School requirements for the Concentration in Ecology and Environmental Biology.

mental problems from an informed ecologist's perspective. In addition to completing basic required courses in the humanities and the physical and biological sciences, the student must complete a core of environmentally based courses from the Department of Ecology and Evolutionary Biology, the Program in Social Ecology, and the School of Engineering. Exposure to current thought in several subareas of ecology is emphasized, and the acquisition of elementary statistical and computer skills is stressed. Opportunities to specialize in several general study areas are furnished. Students will study theoretical concepts and experimental relationships in terrestrial or aquatic systems through Ecology and Evolutionary Biology satellite courses, but may also choose to specialize in the demographic and planning aspects of environmental management through classes in Social Ecology.

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. Additional information is available in the Education Abroad Program section.

Students should also investigate the Applied Ecology major (see the Social Ecology section), offered jointly by the School of Biological Sciences and the Program in Social Ecology. The Applied Ecology major emphasizes ecology as it pertains to human needs, whereas the concentration in Ecology and Environmental Biology emphasizes ecology as a basic science.

University Requirements: See pages 50–53.

School Requirements

Biological Sciences 90, 101, 102, 103, 103L, 104, 104L, 105, 106, 106L, 120, 166. Two required electives from: Biological Sciences 150, 168, 169, 172, 173, 174, 179, 186 (see School Residence Requirement below); and two required electives from Social Ecology E120, E125, E158, E162, E171, E173, Engineering CE173, ME164. Chemistry 1A-B-C, 51A-B and 1LB-LC, 51LA-LB; Information and Computer Science 1A or 21; Mathematics 2A-B and 7; Physics 3A-B-C, 3LA-LB; and Humanities 1A-B-C, or another option of the lower-division writing requirement of the breadth requirement (Category I) and a three-quarter sequence in either Humanities or Literature (Category IV, Humanistic Inquiry).

Students must attain a 2.0 grade point average in required Biological Sciences courses.

School Residence Requirement: At least two required Biological Sciences electives must be successfully completed at UCI.

Planning a Program of Study

A normal program of study for the concentration in Ecology and Environmental Biology is similar to that for the regular Biological Sciences major. A program of study in Ecology and Environmental Biology requires Biological Sciences 166 and 120. In addition, required electives in biological sciences, engineering, and social ecology replace the requirement for three satellite courses.

The UCI breadth requirement may be satisfied in the concentration in Ecology and Environmental Biology in the same manner as the regular Biological Sciences major.

Further clarification on the concentration in Ecology and Environmental Biology may be obtained from the Biological Sciences Student Affairs Office.

Special Programs and Courses

Freshman Honors Curriculum

Individually accelerated programs of study can be designed for freshman students who enter the School of Biological Sciences with strong backgrounds in biology and who have achieved scores of 4 or 5 in the biology section of the Advanced Placement Examination. Such freshmen are exempt from the first course in the Biological Sciences Core (Biological Sciences 90, Diversity of Life) and begin the second Core course (Biological Sciences 101, Evolutionary Biology and Genetics) during the fall quarter of their first year. This program enables participants to complete the fourth Core course by the end of their first year. Any student with such Advanced Placement credit should contact the Biological Sciences Student Affairs Office for more information regarding this program.

Biological Sciences 199

Every undergraduate student in the School of Biological Sciences has the opportunity to pursue independent experimental laboratory or field research under the direct supervision of a professor in the School of Biological Sciences or in the College of Medicine as an apprentice scientist. Under the guidance of a senior scientist, the student is able to experience the challenge and excitement of the world of science and to develop new scientific skills. This activity may commence as early as the sophomore year or, in the case of exceptional students, earlier.

Interested students should investigate the possibilities for research early in order to obtain a great deal of research experience, if they so desire, before they graduate. Although the School of Biological Sciences does not require training in a foreign language, some areas of research demand that students possess foreign language skills. Students are, therefore, encouraged to discuss foreign language needs with their advisors to see if such training is important for their own careers. Advising for research careers in the biological sciences is best accomplished by students working together with a faculty advisor. Students are permitted to take a maximum of five units total per quarter in independent study courses.

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 and accordingly rewards such students with Excellence in Biological Sciences Research certificates. Through undergraduate research and the Excellence in Research Program in Biological Sciences, students have the opportunity of presenting the results of their research endeavors to peers and faculty, and possibly of seeing their research papers published. Selected papers are published in the School's *Journal of Undergraduate Research in the Biological Sciences*.

All Biological Sciences majors doing experimental research under Biological Sciences 199 who have completed a minimum of three quarters on the same project (with at least one quarter taken during the academic year of the symposium) are eligible to participate. They must be in good academic standing, have a grade point average of 2.7 or better, and be making normal progress in Biological Sciences.

Undergraduate Focal Areas

Undergraduate students have the opportunity to focus in one or more specific areas of biology by taking a series of related courses within the School's curriculum. The areas and courses are listed below. (Graduate status or consent of instructor is required of all students taking graduate-level courses.)

Anatomy: Biological Sciences 148, 156, 157, 164

Animal Physiology: Biological Sciences 133, 138, 156, 160, 161, 162, 163, 170, 173, 188; Developmental and Cell Biology 210

Applied Ecology: Biological Sciences 20, 118, 118L, 119, 141, 143, 150

Aquatic Ecology: Biological Sciences 20, 118, 118L, 135, 179

Biophysics: Chemistry 130A-B-C or 131A-B-C; Molecular Biology and Biochemistry 262

Cell Biology: Biological Sciences 129, 141, 144A, 144B, 151, 161

Developmental Biology: Biological Sciences 136, 137B, 147, 148, 148L

Ecological Energetics: Biological Sciences 138, 173

Evolutionary Biology: Biological Sciences 91, 135, 168, 170, 174, 186; Ecology and Evolutionary Biology 250

Genetics: Biological Sciences 128, 137A, 137B, 137C, 151, 168; Ecology and Evolutionary Biology 250; Molecular Biology and Biochemistry 207

Invertebrate Biology: Biological Sciences 135, 143, 179, 188

Microbiology: Biological Sciences 121, 122, 122L, 124 (an organized one-year sequence in the basic microbiological sciences designed to meet the requirements of professional schools in the topic areas, e.g., medical technology); Molecular Biology and Biochemistry 221

Molecular Biology and Biochemistry: Biological Sciences 1B, 1F, 91, 121, 123, 124, 125, 126, 128, 137A, 141, 145A, 153; Chemistry 130A-B-C or 131A-B-C; Ecology and Evolutionary Biology 250; Molecular Biology and Biochemistry 203, 204, 205, 206, 207, 209, 211, 214, 215, 217, 218, 221, 226, 231, 262, 264

Molecular Genetics: Biological Sciences 124, 125, 128, 137A, 137B, 151; Ecology and Evolutionary Biology 250; Molecular Biology and Biochemistry 203, 204, 205, 206, 207, 209

Neurobiology and Behavior: Biological Sciences 108, 133, 152, 153, 154, 155, 156, 157, 158, 159, 161, 162, 163, 164, 165, 174

Organismic Biology: Biological Sciences 1G, 135, 143, 150, 168, 170, 173, 174, 187; Ecology and Evolutionary Biology 224

Plant Biology: Biological Sciences 129, 129L, 134A, 141, 147, 150, Ecology and Evolutionary Biology 230

Theoretical Ecology: Biological Sciences 120, 146, 150, 174, 186; Ecology and Evolutionary Biology 227, 229

Undergraduate Teaching Opportunities

Through the Tutoring Program, students can immediately put to practice skills they have learned in their biology training. This program provides opportunities for students to develop teaching abilities and to perform a worthwhile and necessary service. In the Tutoring Program, UCI students tutor other UCI students in biology, chemistry, mathematics, and physics.

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 more than 85 host universities and colleges in 33 countries throughout the world. See the Education Abroad Program section for additional information.

3-2 Program with the Graduate School of Management

Outstanding Biological Sciences majors who are interested in a career in management may wish to apply for entry into the Graduate School of Management's 3-2 Program. Students normally apply for this program early in their junior year. See the Graduate School of Management section for further information.

Special Research Resources

Special research resources include the Beckman Laser Facility 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 Museum of Systematic Biology, a teaching and research facility which currently contains material on local populations of plants, invertebrates, and vertebrates; 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 UCI Arboretum, a botanical garden facility; the San Joaquin Freshwater Marsh Reserve, which supports controlled marsh biota; the Burns Piñon Ridge Reserve, a high-desert habitat in San Bernardino County; the Theoretical Neurobiology Facility, which provides computational resources for physiologically realistic simulation of neuronal systems; 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 has access to the College of Medicine, thereby providing an opportunity for the sharing of both teaching and research activities.

Advising: Academic, Career, Health Sciences

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 a grade, 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 2) and all other new students will enroll in special sections of Biological Sciences 190. Upper-division peer advisors are actively involved in these seminars.

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 Planning and Placement Center (CPPC) provides services to UCI 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 Planning and Placement section for additional information. The Student Affairs Office has developed a complete career library and a close relationship with the CPPC in an effort to provide current, relevant career information for biology students. Special events designed to provide career information are the annual Biological Sciences Career Fair and monthly career workshops, many of which are cosponsored by the Student Affairs Office and the CPPC.

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.

A B.S. degree, plus short training periods, may prepare students for employment in education, medical technology (usually one year), physical therapy, 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, 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. They also should check deadlines for taking the New Medical College Admission Test (MCAT) or other required tests and application deadlines. The New MCAT and the Dental Admission Test, required by most medical and dental schools, are administered in spring and fall each year at UCI. These tests should be taken in the spring, a year and one-half before the student plans to enter medical or dental school.

Many Biological Sciences students desire a career related to their education in the biological sciences. Students can go into medicine, dentistry, optometry, osteopathy, podiatry, veterinary medicine, and related medical fields; into teaching; and into research in the biological sciences. In properly preparing for such careers, planning is essential early in a student's education.

Leaders in dental, medical, and veterinary education 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.

Health Sciences Advisory Committee

The Health Sciences Advisory Committee consists of faculty and academic counselors in the School of Biological Sciences. The Committee offers specialized services, for a fee, to all students applying to postgraduate professional schools in the health sciences, including (1) a Committee interview and letter of recommendation for most professional school applications, (2) a personal file containing the student's letters of recommendation, and (3)

a service of sending all recommendations for a student to professional and graduate schools.

Student Participation

AED. Alpha Epsilon Delta (AED) is a national honor society for students preparing for careers in the health professions. AED strives to stimulate an appreciation of health careers through interaction among prehealth students, health educators, and practitioners in a variety of health care fields. Guest speakers from every aspect of the health care field highlight weekly meetings. AED annually sponsors workshops on interview techniques and a series of talks on selecting, applying to, and financing medical school. Blood drives sponsored by AED are offered in conjunction with the American Red Cross and take place twice a year. AED recruits new members early in the fall and spring quarters. Because AED is an honor society, membership is contingent upon class ranking (the top 35 percent), completion of five quarters of academic work, and a brief pledge period, during which commitment to the society is assessed.

Asian Students for Health Sciences. Asian Students for the Health Sciences assists Asian pre-health students in attaining their career goals through providing opportunities to learn more about health careers via guest speakers and workshops. The organization also provides information about health professional schools and the application process to these schools, and sponsors tours to various campuses. Social interaction and friendships are promoted between students via counseling and social activities.

BSSO. The Black Students Science Organization (BSSO) was established to provide the leadership and academic support necessary for African-American students to successfully complete their undergraduate studies in the biological and physical sciences at UCI. The organization has the mission of helping to recruit and to retain African-American students interested in education, research, and careers in the health field. It holds weekly meetings; sponsors guest speakers; provides academic support in the form of study sessions, examinations, and study aids from previous courses; organizes trips to medical schools, hospitals, and conferences; arranges gatherings with physicians and medical students; hosts fund-raising events; and compiles and disseminates information on careers, conferences, hospital and laboratory positions, and issues affecting the African-American community in particular. BSSO also works in close association with the College of Medicine chapter of the Student National Medical Association.

CCM. Chicanos for Creative Medicine has been established to promote interaction among Biological Sciences and prehealth professional Chicano-Latino students at UCI. The aims of CCM are (1) to help members attain their career goals, (2) to provide resource information pertinent to the success of Chicano-Latino students at UCI, and (3) to create and maintain a sense of awareness and attitude of being a Chicano-Latino student at UCI. Activities include guest lecturers speaking on their research; Latino professionals, including physicians, dentists, and other health professionals, speaking on their careers; and quarterly fund-raising activities. The group works closely with the Chicano Medical Student Association of the College of Medicine and with the La Raza Medical Association, a Statewide organization.

CPSA. The Chinese Pre-health Student Association (CPSA) is dedicated to providing both academic and moral support to Asian Pacific students who are interested in pursuing careers in the health sciences. The organization's main goal is to introduce the students to a friendly and cooperative environment in which they may receive academic counseling and interact with other students with similar interests. Every year CPSA invites guest speakers from various health fields to talk about their professions. Faculty

and counselors also are invited to give students a detailed overview of medical school admissions preparation and career developments in medicine. In addition, CPSA sponsors a variety of academic and social events such as picnics, dinners, exam reviews, athletic events, field trips, and workshops.

Dental Club. The Dental Club is designed to promote exposure to dentistry for students interested in a career in the dental profession. The Club provides an opportunity for students to learn about dentistry through listening to guest speakers and attending workshops featuring visiting dentists. The Dental Club helps students with their applications to dental school and offers information on dental schools, field trips to local schools, and counseling. The Club also offers mock Dental Admission Test examinations.

Medspur. Medspur is dedicated to serving the academic and social needs of pre-health students at UCI by assisting its members in the pursuit of their career goals. The UCI Chapter of Medspur was established ten years ago and is now one of the largest pre-health organizations on campus. Each year Medspur brings together approximately 100 students interested in medical and other health-related fields. Activities include guest speakers on current health issues and trends, health professional school tours, study sessions, and social events.

Flying Samaritans. The Flying Samaritans of UCI is comprised of student volunteers involved in health care at the Orange County Clinic in Santa Ana, California, and at the El Testero Clinic in Baja California. One weekend per month, members staff the clinic in Mexico and help administer, translate, and otherwise assist health professionals in such duties as taking vital signs. Activities include an annual Christmas party at the El Testero Clinic, and collection of clothing, food, and toys for distribution to people in need.

KHA. The Korean Health Association (KHA) was organized for Korean prehealth students to enhance their awareness of the diversity of health education opportunities. Although KHA concentrates on participants' academic concerns, it also provides opportunities for them to develop and strengthen friendships. The goals of KHA are (1) to assist students in achieving successful academic endeavors in undergraduate studies, (2) to offer assistance and consultation to students regarding their future health-related career goals, (3) to enable students to meet one another, and (4) to encourage peer counseling and tutoring among students. The KHA also provides academic and career counseling and sponsors workshops which are presented by professionals who represent health-related careers.

U See Eyes. U See Eyes is dedicated to helping students interested in optometry learn more about the profession. Members have the opportunity to observe optometrists in different practice settings and tour the Southern California College of Optometry. Workshops on the application process and preparation for the optometry school entrance exam also are available.

Pharmacy Society. The Pharmacy Society is a club that is designed to inform and educate students about the pharmacy profession, helping students become aware of the vast opportunities available in the field. The club assists its members in the application process to pharmacy schools and distributes literature pertaining to such schools and to the pharmacy profession. Activities include guest speakers discussing various aspects of pharmacy including clinical, retail, research, academia, industry, and specialty fields as found in, for example, pediatrics, geriatrics, cardiology, and psychopharmacy.

Graduate Program

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 Psychobiology) and four Departments of the College of Medicine (Anatomy and Neurobiology, Biological Chemistry, Microbiology and Molecular Genetics, and Physiology and Biophysics) cooperate in the conduct of a unified graduate program, administered by the School of Biological Sciences. The organization of the Departments encourages an interdisciplinary approach to scientific problems, especially at the graduate level.

All programs of study, regardless of emphasis, lead to the degrees of Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) in the Biological Sciences. Each Department has a graduate advisor, whom students may consult in regard to the technical details of their individual programs.

Applications for admission to graduate study are evaluated both by the Office of Research and Graduate Studies and by the program or the Department to which the student has applied on the basis of letters of recommendation, Graduate Record Examination scores, grades, and other qualifications of the applicant. Candidates for graduate admission are urged to consult the department(s) whose faculty and expertise best fit their interests.

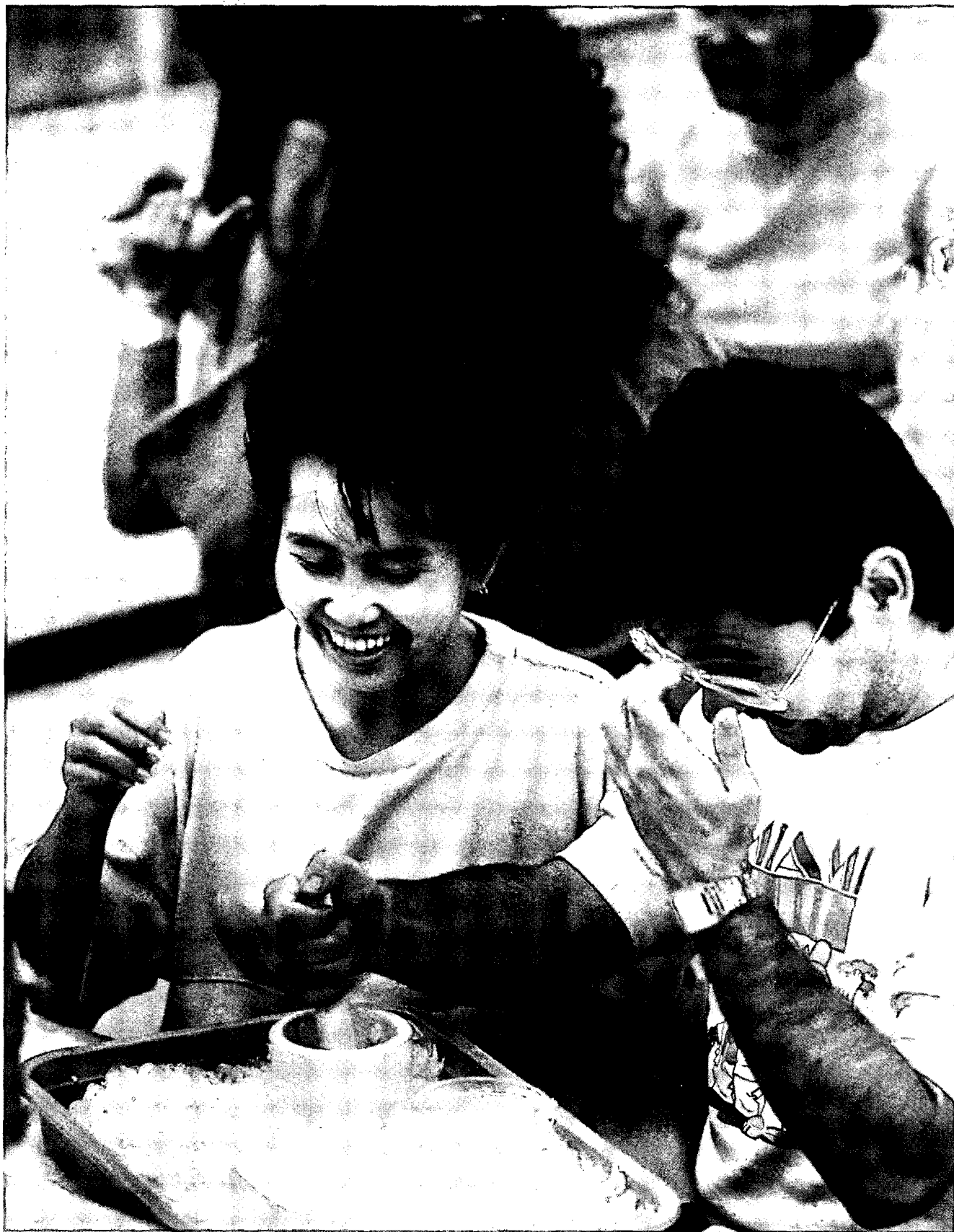
Some faculty are members of an interdisciplinary biophysics and biophysical chemistry group. These faculty are from the Department of Chemistry in the School of Physical Sciences; the Departments of Developmental and Cell Biology and Molecular Biology and Biochemistry in the School of Biological Sciences; and the Department of Physiology and Biophysics in the College of Medicine. This program provides an opportunity for interaction among graduate students and faculty who share common interests in biophysics and biophysical chemistry. Participating graduate students pursue a degree in the department best suited to their own background and research interests. A program of seminars brings the group together monthly to discuss research problems of mutual interest, and a regular series of interdisciplinary courses is offered by the participating faculty to provide formal instruction in areas encompassed by biophysics and biophysical chemistry.

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. 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, attain the Master's degree in two years, and attain the Ph.D. in four or five years, depending on departmental affiliation. A Master's degree, however, is not a prerequisite for the Ph.D. degree.

During the first part of the initial year of graduate work, the student plans an academic program in consultation with the graduate advisor or a small committee. Faculty advisors are changed if the specific interests of the student change. 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, provided that they are acceptable into that program. Students are encouraged to consult with other faculty members with regard to their research and academic interests.



Undergraduate students explore the major concepts of modern biology through the Biological Sciences Core, an eight-quarter series of lectures and laboratories.

During their graduate training all students will serve some time as teacher apprentices under the direction of advanced teaching assistants and faculty. Advanced graduate students may work closely with faculty in the planning and execution of the teaching program. The amount and exact 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 nonresearch 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 specialization. This program is terminated with a comprehensive final examination.

Doctor of Philosophy

First Level of Competence. The student attains this level by completing oral or written examinations at the discretion of the department.

Second Level of Competence. This level is attained by passing an examination dealing with the student's particular interests. A committee for the purpose of administering this examination is appointed by the Dean of Graduate Studies and Research.

Once this examination is completed, the student is advanced to candidacy for the degree and is considered to have formally begun dissertation research. The student submits a dissertation on this research and defends it at an oral examination during the final year of graduate study.

Courses in Biological Sciences

For Nonmajors

Nonmajors may also take other courses for which they have the prerequisites.

1 Fundamentals of Modern Biology. Courses which, along with Biological Sciences 79, 80, and 81, provide the nonmajor with a fundamental knowledge of biology. Each course is an independent unit with no prerequisites. Students may take any combination of courses within the collection.

1A Physiology (4) F, W. Lecture, three hours. How animal cells and animals work, with attention to the structure and function of the human body. (II)

1B Molecular Biology (4) W. Lecture, three hours. Molecules of life, with emphasis on medical applications. (II)

1C Introduction to Ecology (4) S, Summer. Lecture, three hours. Principles of ecology with application to populations, communities, ecosystems, and humans. Same as Social Ecology E6. (II)

1D Human Development: Conception to Birth (4) F, 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 formation; sexual intercourse; contraception and venereal diseases; fertilization; cell division; embryonic development; fetal physiology; pregnancy; birth, lactation; chromosomal aberrations; birth defects; human genetics; genetic disease; counseling. (II)

1E Botany (4) F, Summer. Lecture, three hours. Structure and function of flowering plants related to their roles in ecology and human needs. (II)

1F Molecular Basis of Human Disease (4) W. Lecture, three hours. Basic molecular biology and biochemistry of the human organism.

Basic processes of disease in human populations are covered. Emphasis is on the molecular and biochemical basis of disease. (II)

1G California Natural History (4) S. 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. One optional Saturday field trip. (II)

79–80–81 Biological Bases of Behavior. Lecture, three hours. Three introductory courses, each an independent unit with no prerequisites. Students may take any combination of courses within the collection.

79 How the Brain Works (4) F. The biology of the nervous system. The neuron, its structure and function. Role of glial cells. The physiology of nerve cell membranes and transmitter action. Emphasis on evolution and development of the nervous system. (II)

80 The Brain and Behavior (4) W. Brain mechanisms underlying psychological processes, including consciousness and sleep, sex, food and water intake, perception, learning, memory, and language. (II)

81 The Biology of Behavior Disorders (4) S. Current facts and theories regarding mental illness, genetic disorders, brain damage, sexual deviance, drug abuse, and intellectual functioning. (II)

For Both Majors and Nonmajors

1E Botany (4) F, Summer. Lecture, three hours. Structure and function of flowering plants related to their roles in ecology and human needs. (II)

1G California Natural History (4) S. 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. One optional Saturday field trip. (II)

20 Western Water Problems (4) W of odd years. Seminar, four hours. Minimum streamflow, anadromous fisheries, riparian habitats, and characteristics of western river systems. Ecological effects of dams and impoundments, western water law, and mitigation strategies. California and the Northwest are emphasized.

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.

30 Biomedical Ethics (2) S. Seminar, three hours. Ethical issues inherent in modern biological and medical advances. Behavior modification, food and resources distribution, malpractice, and other current ethical issues are covered by scientists and community members. Discussion with the guest speaker. Pass/Not Pass Only.

40 Biological Sciences Summer Science Program (4) Summer. Lecture, five hours; laboratory, three hours. Developmental approach to the study of a scientific subject. The cell, plants and animals, diversity of life, and subdivisions in biology using indexes, journals, biological dictionaries, and personal public relations.

45 AIDS Fundamentals (4) F. Lecture, three hours. 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 Social Ecology S45. (II)

65 Biological Conservation (4) S. 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. Environmental law. (II)

50 The Biology of Heart Disease (4) S. Lecture, four hours. Guest lecturers from the field of cardiovascular medicine discuss current concepts regarding cause, diagnosis, and treatment of heart disease. Topics include surgery, rehabilitation, and congenital defects, with emphasis on prevention.

78 Health (2) F, S. Lecture, three hours. A practical health education course comprised of lectures by practicing professionals. Health topics

covered include stress, physical fitness, cardiovascular disease, cancer, communicable diseases, nutrition, eating disorders, rape prevention, common illness, and trauma and emergency medical care. Pass/Not Pass Only.

91 Origin of Life and Biological Evolution (4) S. Lecture, three hours. Origin of life starting with the primordial atmosphere of the earth about four billion years ago. Biological evolution of organisms traced in increasing steps of chemical complexity beginning with the formation of primitive biological molecules. Evolution of immune system, nervous system, and behavior.

Seminars, Special Courses, and Independent Study

Seminars

2A Freshman Seminars (0). Lecture, one hour. Weekly seminars conducted under the direction of New Student Peer Academic Advisors. Speakers, including faculty, provide information about the School of Biological Sciences, campus resources, and special programs. Pass/Not Pass Only. One unit of workload credit only. Open to freshman Biological Sciences majors only.

2B Freshman Seminars (0). Lecture, one hour. To further facilitate Biological Sciences students' understanding of the structure, function, opportunities, and current issues in the biological sciences through faculty presentations and readings. Pass/Not Pass Only. One unit of workload credit only. Open to freshman Biological Sciences majors only. Prerequisite: Biological Sciences 2A.

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. Open to Biological Sciences majors only.

3B Non-Health Sciences Career Exploration (0). Lecture, one hour. A survey course designed to assist students in exploring non-health science career options. Lectures by professionals in various fields. Students are required to investigate one area of particular interest and do a career observation. Pass/Not Pass Only. One unit of workload credit only. Open to sophomore, junior, or senior Biological Sciences majors only.

190 Transfer Student Seminars (0). Lecture, one hour. Weekly seminars conducted under the direction of New Student Peer Academic Advisors. Speakers, including faculty, provide information about the School of Biological Sciences, campus resources, and special programs. Pass/Not Pass Only. One unit of workload credit only. Open to new transfer students only.

Special Courses

98 Special Group Activities F, W, S.

Sec. 1A Health Sciences Experience, Medicine, and Allied Health (0). Opportunities to observe or participate in various health fields. Specific number of hours per quarter of volunteer work with approved health professionals required. Passing contingent on completion of minimum specified hours with satisfactory evaluation. Some agencies require a two-quarter commitment. Fields include optometry, veterinary and human medicine, and allied health. Pass/Not Pass Only.

Sec. 1B Health Sciences Experience, Dentistry (0). Description same as Sec. 1A. Pass/Not Pass Only.

Sec. 2 Tutoring in Biological Sciences (2 to 4). Students act as peer tutors and provide tutorial assistance in Biological Sciences Core classes. Prerequisite: consent of instructor. May be repeated for a total of eight units. Pass/Not Pass Only.

Sec. 3 Reading, Writing, and Reasoning for Biological Science Majors (0) F, W, S. Strategies and practice to strengthen reading, writing, and reasoning skills in preparation for graduate study in biological sciences and advanced degrees in areas such as education, business, law, dentistry, optometry, medicine, and public health. Pass/Not Pass Only. Open to junior or senior 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.

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.

199A-B-C 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. 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.

Core Curriculum

Biological Sciences courses numbered 90, 101, 102, 103, 103L, 104, 104L, 105, 105L, 106, 106L, and 107 are required of all Biological Sciences majors. (See Concentration in Ecology and Environmental Biology for exceptions.) Lecture, three hours; laboratory, three hours unless otherwise noted. (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.)

90 Diversity of Life (5) F, W, S. Lecture, three hours; laboratory, four hours. Types of living organisms with an introduction to systematics and classification. Evolutionary aspects are stressed.

101 General and Evolutionary Genetics (4) F. Lecture. Introduction to genetics and the genetics of populations. Basic features of the replication and expression of DNA; cell division; and gene transmission. Recombination and mutation in diploid organisms. Concepts of genetic variability and natural selection in populations. Prerequisites: Biological Sciences 90 and concurrent enrollment in or completion of Chemistry 1A-B-C. Formerly Biological Sciences 101A.

102 Ecology (4) W. Lecture. Ecological principles and their relevance at several levels of organization. Individuals, populations, communities, and ecosystems and interactions of these levels with physical and biotic environments. Prerequisites: Biological Sciences 90 and 101. Formerly Biological Sciences 101E.

103 Developmental and Cell Biology (4) S. Lecture. Basic concepts of cell and developmental biology. Emphasis on structure of the cell and its components, and development of structure during embryology of plants and animals. Prerequisite: Biological Sciences 101. Formerly Biological Sciences 101B. Corequisite: Biological Sciences 103L.

103L Developmental and Cell Biology Laboratory (2) S. Corequisite: Biological Sciences 103. Formerly Biological Sciences 101LB.

104 Physiology (5) F, W. Lecture, four hours. Major functional features of plants and animals relevant to their survival. Focus on the whole organism and its constituent organs and organ systems; functional attributes of cells introduced as required. Discussion of neurophysiology and behavior deferred to Biological Sciences 105. Prerequisite: Biological Sciences 103. Formerly Biological Sciences 101C. Corequisite: Biological Sciences 104L.

104L Physiology Laboratory (2) F, W. Corequisite: Biological Sciences 104. Formerly Biological Sciences 101LC.

105 Psychobiology (4) F, S. Lecture. Evolution of behavior, including ethological and psychological aspects and analysis of neuroanatomical, neurochemical, neurophysiological, and neuroendocrine systems underlying basic behavioral processes. Prerequisite: Biological Sciences 104. Formerly Biological Sciences 101D.

105L Psychobiology Laboratory (3) F, S. Prerequisite: Completion of or concurrent enrollment in Biological Sciences 105. Formerly Biological Sciences 101LD.

NOTE: 106 Biochemistry and 107 Molecular Biology form a continuous sequence covering modern biochemistry and molecular biology.

106 Biochemistry (4) F, S. Lecture. Structure and properties of proteins; major biochemical pathways and mechanisms for their control. Prerequisite: completion of or concurrent enrollment in Chemistry 51B. Formerly Biological Sciences 101F.

106L Biochemistry Laboratory (3) W, S. Properties of enzymes and the culture and isolation of mutants of microorganisms. Prerequisite: concurrent enrollment in or completion of Biological Sciences 106. Formerly Biological Sciences 101LF.

107 Molecular Biology (4) W, S. Lecture. Biochemistry and replication of nucleic acids; molecular genetics; protein biosynthesis; genetic code; regulation of expression of genetic information; biochemical evolution. Prerequisite: Biological Sciences 106. Formerly Biological Sciences 101G.

Satellite Courses

108 Behavioral Neuroscience Theory and Methods (4) W. Lecture, three hours. Study of the nervous system and how behavior is mediated. Investigation of the neural mechanisms underlying both simple and complex aspects of behavior.

118 Microbial Ecology of Natural and Polluted Waters (4) S. Lecture, three hours. Examines microorganisms and their functions in the aquatic environment, specifically microorganisms' role in the biogeochemical cycles of nitrogen, sulfur, and mercury, and how our activities are affecting these cycles. Considers how and why indicator organisms are used in the determination of water quality for public health. Prerequisites: Social Ecology E5 and E8 and/or a general course in the Biological Sciences Core curriculum. Same as Social Ecology E160.

118L Microbial Ecology of Natural and Polluted Waters Laboratory (4) S. Laboratory, three hours. Enumeration and identification of microorganisms from various aquatic environments. Examines microbial mediation of the sulfur, nitrogen, and mercury cycles and public health aspects of water quality. Prerequisites: Social Ecology E8 or a general course in the Biological Sciences Core curriculum and completion of or concurrent enrollment in Biological Sciences 118. Same as Social Ecology E160L.

119 The Chemical Components of Water Quality (4) F. Lecture, three hours; laboratory, three hours. A survey of the chemical properties of water used for drinking, agriculture, and industry. Covers basic chemical analyses of water and the significance of these tests in determining water quality. Prerequisites: Chemistry 1A and Social Ecology E5 and E8 or a general course in the Biological Sciences Core Curriculum. Same as Social Ecology E162.

120 Quantitative Ecology (4) W. Lecture, three hours; discussion, one hour. Analysis and survey of quantitative ecological models: population growth and regulation, predation, competition, community composition, sociobiology, optimality theory, and similar topics. Interactive computer tutorials with graphics. Prerequisites: Biological Sciences 102 and Mathematics 2A-B.

121 Immunology with Hematology (4) W. Lecture, three hours; discussion, two hours. 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 106 or consent of instructor.

122 General Microbiology (4) F, 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 106.

122L General Microbiology Laboratory (4) F, Summer. Laboratory, nine 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: concurrent enrollment in Biological Sciences 122 and consent of instructor.

123 Computer Applications in Molecular Biology (3) S. Laboratory, three hours. The use of computer programs in molecular biology. Beginning from DNA sequence data, students will enter and construct a data base, analyze the sequence data, and predict some of the structural features of proteins. A familiarity with personal computers is desirable but not required. Prerequisite: Biological Sciences 107 and consent of instructor.

124 Virology (4) F. Lecture, three hours. Infective cycle, growth, reproduction, and host interrelationships of animal viruses. Molecular effects of virus infection in cells and animals and the relation between virus infection and cancer. Prerequisite: Biological Sciences 106.

125 Molecular Biology of Transformed Animal Cells (4) S. Lecture, three hours. Molecular mechanisms of carcinogenesis. Consideration of transformation by DNA tumor viruses, RNA tumor viruses, and chemical carcinogens. Prerequisite: concurrent enrollment in Biological Sciences 107 or consent of instructor.

126 Bacterial Physiology (4) S. Lecture, three hours. Includes basic concepts of bacterial physiology with emphasis on the biochemical mechanisms of carbon, nitrogen, sulfur, and energy metabolism and how bacteria function as geochemical agents. Prerequisite: Biological Sciences 106.

127 Pathogenic Microbiology (4) W. Lecture, three hours. Disease-causing microorganisms including bacteria, fungi, and viruses explored in light of their ability to cause disease. Nature of host-parasite relationship and role of immunity in the pathogenesis of infectious diseases. Prerequisite: Biological Sciences 122 or consent of instructor.

128 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 106; Biological Sciences 107 recommended.

129 Biotechnology and Plant Breeding (4) F, Summer. 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. Prerequisites: Biological Sciences 90, 91, or consent of instructor.

129L Plant Cell Culture Laboratory (4) W of odd years. Laboratory, 60 hours per quarter, run on two, full three-day weekend sessions which normally will not conflict with other classes. Isolation and culture of plant cells and tissues, i.e., protoplasts, pollen, meristem. Genetics and structural manipulation of cultured cells, i.e., fusion, laser microsurgery, mutation. Regeneration of plants from cultured cells and tissues. Greenhouse experience (propagation, fertilization, grafting). Prerequisite: Biological Sciences 129 or consent of instructor.

130 Laser Biology and Medicine (4) F. Lecture, three hours. Laser applications in biology and medicine approached by describing laser systems, photon interaction with matter; biological problems studied with laser beams and medical (diagnostic and therapeutic) applications of lasers. Photobiology and photomedicine as disciplines discussed. Prerequisites: Biological Sciences 103 and concurrent enrollment in or completion of Biological Sciences 106.

133 Sensory Physiology (4) S of even years. Lecture, three hours. Physiology and function of sense organs. Emphasis on transduction at the cellular level. Prerequisite: consent of instructor.

134 Plant Physiology (4) S. Lecture, three hours. Plant hormones, growth and development, metabolism, mineral nutrition, and photosynthesis. Prerequisite: Biological Sciences 1E or consent of instructor.

135 Biology of an Organism: Hydra (4-4) S of even years. Lecture, three hours. Some basic concepts of biology through study of the life history of the simple freshwater hydra. Reading material consists mostly of research and review articles. Prerequisites: Biological Sciences 103 and consent of instructor.

136 Developmental Biology (4) W. Lecture, three hours. Development of animal and plant cells, tissues, and organisms. Reproduction, growth,

aging, differentiation, and pattern formation. Prerequisite: Biological Sciences 103 or consent of instructor.

137 Genetics

137A Molecular Genetics of Bacteria and Phage (4) W. Lecture, four hours. Prerequisites: Biological Sciences 101 and 106. Recommended: concurrent enrollment in Biological Sciences 107.

137B Eucaryotic Genetics (4) F. Lecture, four hours. Basic genetics of animals, plants, and humans. Transmission genetics, chromosome behavior, and molecular genetics unique to higher organisms. Prerequisite: Biological Sciences 104. Recommended: concurrent enrollment in Biological Sciences 137LB.

137LB Eucaryotic Genetics Laboratory (4) F. Laboratory, four hours. Experiments include generation and analysis of chemical- and x-ray-induced mutation, gynadromorphmapping, clonal analysis of mitotic crossing-over, chromosome analysis, and restriction mapping of recombinant DNA clones. Recommended: concurrent enrollment in Biological Sciences 137B.

137C Human Genetics (4) S. Lecture, three hours. The structure, function, transmission, and evolution of human genes and chromosomes and the biological basis of normal and abnormal variation in the human population. Prerequisite: Biological Sciences 101.

138 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 104.

141 Biology of Plant and Natural Environmental Toxins (4) W of even years. Lecture, three hours. Introduction to natural toxins produced by fungi, plants, and bacteria that poison food, water and air; the biological effects of toxins on organelles and whole organs and their mode of entry and action; current environmental toxicological issues. Prerequisite: Biological Sciences 103 and Chemistry 51A.

143 Human Parasitology (4) S. Lecture, three hours. Introduction to human-animal parasitic diseases including worm and protozoan infections. Prerequisite: Biological Sciences 104 or consent of instructor.

144 Cell Biology. Taught jointly by faculty from the Departments of Developmental and Cell Biology and Molecular Biology and Biochemistry. Designed to present fundamental as well as advanced concepts in modern molecular cell biology.

144A Cell Organelles and Membranes (4) F. Lecture, three hours. Structure, function, and biogenesis of biological membranes and membrane-bound organelles; protein trafficking and transmembrane signalling. Prerequisite: Biological Sciences 103.

144B Cell Biology (4) W. Lecture, four hours. Plasma membrane and cytoskeletal-mediated events. Topics include: endocytosis, receptor-ligand 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 103.

144C Plant Cell Biology (3) S. The biology of plant cells at a molecular level. Topics include molecular biology of plant organelles (chloroplasts, mitochondria, peroxisomes, vacuoles); metabolism (photosynthesis, photorespiration); transposable elements; transformation and molecular responses to stress. Prerequisites: Biological Sciences 103 and 104, or consent of instructor.

145A Gene Expression and Its Regulation in Eukaryotic Cells (4) W. Lecture, three hours. Molecular organization of eukaryotic genes and the molecular mechanisms which regulate their expression. Topics include developmentally regulated genes, tissue-specific gene expression, multi-gene families, oncogenes, gene transposition, and recombinant gene cloning. Prerequisite: Biological Sciences 107.

145B Molecular Biology of Animal Development (4) S. Lecture, three hours. Molecular mechanisms regulate differential gene expression in animal development. Emphasis on quantitative analyses of developmentally regulated genes. Corequisite: Biological Sciences 107 or consent of instructor. Prerequisite: Biological Sciences 103.

146 Mathematical Models of Biological Systems (4) S. Lecture, three hours. An introduction to the use of mathematical and computational models of biological systems. Examples drawn from enzyme and receptor

kinetics, population dynamics, cellular neurobiology, and epidemiology. Laboratory exercises provide familiarity with mathematical structures and the effects of parameter variation. Prerequisites: Biology core, math through calculus, and consent of instructor.

147 Growth and Development of Plants (4) W. Lecture, three hours. Plant growth and development at the organismic, cellular, and molecular levels. Subjects include plant reproduction and embryology; morphogenesis of plant meristems; cell differentiation; and differentiation gene expression, genetic transformation, and somatic cell genetics. Prerequisite: Biological Sciences 103.

148 Vertebrate Embryology (4) S. Lecture, three hours. Introduction to animal development through organogenesis with emphasis on vertebrates. Prerequisite: Biological Sciences 103.

148L Vertebrate Embryology Laboratory (3) S. Laboratory, four hours. Introduction to the principles of descriptive and experimental embryology. Students develop a spatial and temporal appreciation of cellular morphogenesis by reconstructing serially sectioned embryonic materials (frog, chick, and pig). Prerequisite: Biological Sciences 148.

149 Development of the Nervous System (4) W. Lecture, three hours. Neurogenesis, cell migration, and environmental interactions from embryogenesis to late maturation with emphasis on vertebrates. Prerequisite: Biological Sciences 105.

150 Conservation Biology (3) S of odd years. Lecture, three hours. Considers conservation of animal and plant endangered species. Examines current trends in deforestation, environmental degradation, natural and induced extinctions, principles of preserve design and management, legislation, conservation genetics and ex situ methods of conservation. Prerequisites: Biological Sciences 90 and 101.

151 Structure and Function of Eucaryotic Chromosomes (4) S. Lecture, three hours. Molecular organization of chromosomes, comparisons of active vs. inactive chromatin structure, current research in chromosome function and its regulation, with emphasis on techniques utilized to probe these problems. Prerequisite: Biological Sciences 107.

152 Neural Mechanisms of Learning (4). Lecture, three hours. Neural mechanisms and processes underlying learning, ranging from habituation in simple neuronal systems through neural processes of learning in the intact mammalian brain to brain substrates of human information processing and language. Prerequisite: Biological Sciences 80 or 105.

153 Chemistry and Pharmacology of Synaptic Transmission (4) S of even years. Lecture and discussion, three hours. Introduction to chemistry and pharmacology of neural tissue with emphasis on the regulation of neurotransmitter synthesis. Prerequisite: Biological Sciences 105 or consent of instructor.

154 Introduction to Molecular Neurobiology (4) S of even years. Seminar, three hours. Introduction to current research developments in molecular biology of the receptor, including receptor biosynthesis, gene cloning, and neural control of gene expression. Prerequisite: Biological Sciences 107 and consent of instructor.

155 Seminar in Psychobiology (4) F. Seminar, three hours. Selected current research problems concerning neurobiology and behavior. Students prepare and present papers. Prerequisites: Biological Sciences 80–81 or 105 and consent of instructor.

156 Neural Systems (4) W of even years. Lecture, three hours. How modern neuroscience integrates several types of disciplines such as anatomy, physiology, developmental biology, and behavioral biology to develop hypotheses about the operation of particular brain regions. Most useful to students who have had satellite courses or research experience in neurophysiology or neurochemistry. Prerequisite: Biological Sciences 105.

157 Comparative Vertebrate Anatomy (6) W. Lecture, three hours; laboratory, six hours. Structure and evolution of the major organ systems in vertebrates, from fish to mammals. Laboratory work includes detailed dissection of a shark and cat. Prerequisite: Biological Sciences 103 or 104.

158 Neurobiology of Learning and Memory (4). Lecture and discussion, three hours. Basic issues concerning the nature of behavioral plasticity and information storage and their neural substrates. Prerequisites: Biological Sciences 79 and 80, or 105, or consent of instructor. Same as Psychology 145B.

159 Animal Behavior (4) S. Lecture, three hours. A survey of the proximate and ultimate causations of species-typic behavior. The role of neural and endocrine control of behaviors is stressed. Prerequisite: Biological Sciences 105 or consent of instructor.

160 Language and the Brain (4). Lecture, three hours. Analysis of current research on the biological bases of human linguistic capacity. Topics include development, focusing on hemispheric specialization and plasticity; the localization of specific linguistic functions in adults, with an emphasis on the study of aphasia; the relation of linguistic capacity to general cognitive capacity, considering especially research on retardation. Prerequisites: Biological Sciences 80 and 81, or Biological Sciences 105, or consent of instructor. Same as Psychology 156B and Linguistics 158.

161 Cellular Neurobiology (4) S of even years. Lecture and discussion, three hours. Introduction to biophysics and biochemistry of nerve cells emphasizing membrane potentials, conduction and transmission, synaptic chemistry, and information processing. Prerequisite: Biological Sciences 105.

162 Synaptic Mechanisms (4) S of odd years. Lecture and discussion, three hours. New concepts and current literature in developing areas of synapse function. Prerequisite: Biological Sciences 105 or consent of instructor.

163 Psychoneuroendocrinology (4) F of even years. Lecture and discussion, three hours. Introduction to materials showing that hormones are involved in neural development and mature function and behavior and that behavior is involved in the control of hormonal secretions. Prerequisite: Biological Sciences 105.

164 Neuroanatomy (4) S of odd years. Lecture and discussion, three hours. Introduction to comparative neuroanatomy, emphasizing mammalian central nervous system. Prerequisite: Biological Sciences 105.

165 Theoretical Psychobiology (4) S of even years. Lecture, three hours. The origin, development, and current status of major ideas and theories concerning the neurobiological bases of behavioral adaptation. Prerequisite: Biological Sciences 105 or Biological Sciences 80.

166 Field Methods in Ecology (4) F. Lecture, one hour; laboratory, six hours; field trip. Introduction to materials and methods techniques and statistical treatment. Emphasis on field studies with effort equally divided between plant and animal ecology in marine, freshwater, and terrestrial habitats. Requires outdoor-type durable clothing and footwear. Four papers are required, written in the style of a scientific journal. One weekend camping trip is required. (I) Prerequisites: Biological Sciences 90 and completion of or concurrent enrollment in 102; consent of instructor.

168 Advanced Evolutionary Biology (4) F. Lecture, three hours. An examination of the major mechanisms of evolution. Topics include population and quantitative genetics theory, genetic basis of adaptation, the neural theory of evolution, the evolution of sex, life-history evolution, coevolution, speciation, and mass extinctions. Prerequisite: Biological Sciences 101.

170 Vertebrate Structure and Function (4) S of even years. An introduction to advanced topics in vertebrate biology. Presentation of specific case studies to demonstrate general principles of vertebrate morphology, function, and evolution. Case studies include: the origin and functional morphology of bird flight; mechanics of terrestrial locomotion; structure and function of the vertebrate skull. Prerequisite: Biological Sciences 104 or 157.

171 Neurobiology of Transmitter Receptors (4) W. Lecture and seminar, three hours. Introduction to the use of frog oocytes as a model system for studies in neurobiology. Transplantation of neurotransmitter receptors and voltage-operated ion channels from the brain into oocytes. Prerequisites: Biological Sciences 105 or 107 and consent of instructor.

172 Systematics and Evolution of Flowering Plants (4) S of even years. Lecture, three hours; laboratory, three hours, two required field trips. Basic systematic concepts including computer analysis of phylogenies, introduction to major groups of flowering plants, analysis of evolutionary significance of characters used in systematic studies. Prerequisites: Biological Sciences 90, 101, and 103.

173 Physiological Animal Ecology (4) S of even years. Lecture, three hours; field, three hours. An examination of the functional means by which vertebrates cope with their environments; roles of osmoregulation,

thermoregulation, and energy metabolism in the lives of tetrapods. Prerequisites: Biological Sciences 102 and consent of instructor.

174 Behavioral Ecology (4) F. Lecture, three hours; laboratory, 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 102 or consent of instructor.

179 Limnology and Freshwater Biology (4) W. 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 102 or consent of instructor.

184 Entomology (4) F of even years. Central features of the Insecta are reviewed in an evolutionary and ecological context. Topics include external and internal morphology, systematic relationships among the insect orders, insects in ecological communities, and the impact of agricultural and medical pests. Field trips. Prerequisite: Biological Sciences 102.

186 Population and Community Ecology (4) W. Lecture, three hours. Population structure, function, development, and evolution. Topics include population structure, population growth and regulation, population dispersion patterns, life history strategies, predation, competition, mutualism, species diversity, succession, island biogeography, and co-evolution. Prerequisite: Biological Sciences 102.

187 Natural History of the Vertebrates (4) S of odd years. Lecture, three hours; laboratory, three hours; field work. The evolutionary history and biology of vertebrates with emphasis on the physiology, ecology, and behavior of local species of amphibians, reptiles, birds, and mammals. Laboratories are divided between studies of fossil and recent material, and field trips for the identification and study of the behavior and ecology of local fauna. Two weekend field trips. Prerequisite: Biological Sciences 102 or consent of instructor.

188 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. Prerequisite: Biological Sciences 102, 103, and 104.

Graduate Study in the School of Biological Sciences

Graduate student status or consent of instructor is a prerequisite for all 200–299 courses listed in the following departmental sections.

Department of Developmental and Cell Biology

367 Steinhaus Hall; (714) 856-6928

Hans R. Bode, **Department Chair**

Faculty

Joseph Arditti: Plant physiology and development; orchid and taro biology

Michael W. Berns: Experimental cytology; laser microbeams; laser medicine

Hans R. Bode: Cell differentiation and pattern formation

Marianne E. Bronner-Fraser: Mechanisms of cell migration and differentiation; cell surface-extracellular matrix interactions; morphogenesis; teratogenesis and abnormal development; neurotransmitter synthesis and plasticity

Peter J. Bryant: Control of growth in animal development

Susan V. Bryant: Vertebrate limb development and regeneration

Frank J. Calzone: Molecular mechanisms of development

Richard D. Campbell: Developmental biology of multicellular organisms

Donald E. Fosket: Cell growth and development

Patrick L. Healey: Plant cellular differentiation and morphogenesis; ultrastructure and histochemistry of secretory systems; early reproductive development

Franz Hoffmann: Plant somatic cell genetics and plant cell biology

Daniel J. Knauer: Mammalian cellular biochemistry; role of extracellular proteases and inhibitors in development

Stuart M. Krassner: Parasite immunology and biochemistry

Howard M. Lenhoff: Biology of *Hydra*; immobilized enzymes; history of experimental biology

J. Lawrence Marsh: Molecular genetics of development and gene regulation
 Ronald L. Meyer: Developmental neurobiology
 R. Michael Mulligan: Plant molecular and cell biology
 Ben A. Murray: Molecular, cellular and developmental biology of vertebrate cell surface molecules
 Diane K. O'Dowd: Development of ion channels and electrical excitability in cells of the nervous system
 Eloy Rodriguez: Cellular metabolism and biochemistry of bioactive and toxic metabolites in plant cell cultures and tissues
 Howard A. Schneiderman: Developmental biology and insect physiology
 L. Dennis Smith: Molecular biology of oogenesis and early development; nucleo-cytoplasmic interactions

The Department of Developmental and Cell Biology is concerned with the development, physiology, structure, and function of organisms and their component cells. The main emphasis of the Developmental and Cell Biology graduate program is research training in developmental biology, comparative physiology of animals, or cellular and developmental plant biology. The Department maintains facilities for research involving biochemistry; genetics; electron microscopy; cell, tissue, and organism culture; microsurgery; and neurophysiology.

Students in the Department of Developmental and Cell Biology generally enter one of three graduate curricula. In the first year, those emphasizing comparative physiology take a three-quarter sequence of organismic physiology (Developmental and Cell Biology 210). Those emphasizing developmental biology take a three-quarter sequence of courses on molecular and cellular biology during the first year, followed by a total of five advanced courses during the subsequent years. Those emphasizing cell biology take a three-quarter series of core courses focused on cell biology as well as courses in protein and nucleic acid biochemistry. The selection of the first-year course program is made in consultation with a faculty advisory committee when the student first arrives on the campus. This committee monitors the student's progress through the first year after which the student's dissertation committee is established and takes over the advising function. Students are able to diverge from this basic core into their areas of special interest by means of graduate seminar courses in subsequent years. At the end of the first year students in comparative physiology and cellular and developmental plant biology take an oral examination that covers a broad area in the general and related fields of interest to that student. Students in developmental and cell biology prepare and defend a research proposal and are examined in fields related to the proposal. Since many doctoral students in the Department undertake academic careers, the Department requires each graduate student to participate in a directed teaching experience during each year of the graduate program. Students who enter with normal academic preparation and pursue a full-time program of study ordinarily should be able to earn the Ph.D. degree within five years or less.

Some faculty from the Department are members of an interdisciplinary biophysics and biophysical chemistry group, which is described in a previous section.

Courses in Developmental and Cell Biology

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.

201A-B-C Developmental and Cell Biology Journal Club (2-2-2) F, W, S. Seminar, two hours. Advanced study in various fields of organismic biology. Prerequisite: consent of instructor. May be repeated for credit.

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.

204 Mammalian Regeneration Journal Club (2-2-2) F, W, S. Seminar, one hour. Discussion of recent papers in the area of mammalian regeneration, covering such systems as the nervous system, muscles, limbs. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory Only.

206A-B-C Cell Biology Journal Club (2-2-2) F, W, S. Seminar, one hour. Advanced study of various topics in cell biology. Prerequisite: consent of instructor. May be repeated for credit. Satisfactory/Unsatisfactory Only.

208 Plant Cell and Molecular Biology Journal Club (2-2-2) F, W, S, Summer. Seminar, two hours. Advanced study in various topics of plant cell and molecular biology. Open to undergraduates (primarily undergraduates in plant laboratories) with consent of instructor. May be repeated for credit.

209 Molecular Genetics Journal Club (2-2-2) F, W, S, Summer. Seminar, one and one-half hours. Advanced topics of current interest in molecular and developmental genetics. May be repeated for credit. Satisfactory/Unsatisfactory Only.

231A Molecular Biology of the Gene (4) F. Lecture, three hours. Structure of genes and their regulation beginning with lectures on nucleic acid chemistry and a critical review of recombinant DNA technology and then focusing on the molecular mechanisms controlling gene expression. Special emphasis on gene regulation in developing systems. Prerequisite: consent of instructor.

231B Cell Biology (4) W. Lecture, three hours. A biochemical, biophysical, and molecular view of cell biology. Topics include the biochemistry and biophysical properties of membranes, membrane proteins, and associated molecules, the extracellular matrix, biological signal transduction, and intracellular second messenger generation. Lectures are from current research literature. Prerequisite: consent of instructor.

231C Early Development (4) W. Lecture, three hours. Development of animal eggs from fertilization until morphological specialization. Emphasis on two processes: pattern formation and morphogenesis. Patterning is studied genetically, experimentally through regeneration, and theoretically. Morphogenesis is analyzed in terms of cell behavior. Attention to the role of extracellular matrices in both processes. Prerequisite: consent of instructor.

231D Growth and Differentiation (4) S. Lecture, three hours. The cell cycle, growth control and cancer, cell lineages and differentiation, cellular analysis of the immune system, and the cell biology of the nervous system. Prerequisite: consent of instructor.

231E Plant Cell and Development (4) S. Lecture, three hours. Organization: cell wall; cytoplasm; organelles. Differentiation: meristem; specialized cells. Development: cell division; fertilization; embryogenesis; cell culture. Transport and communication: xylem and phloem; plasmodesma; hormones. Interactions with other organisms: galls and crown gall; symbiosis; pathogens; genetic engineering. Prerequisite: consent of instructor.

233 Cell Surface Biology (4-4) S of even years. Lecture, three hours. Modern concepts of cell surface organization and dynamics as well as cell-cell, cell-matrix, and hormone-cell interactions of normal and pathologic cells and tissues. Prerequisite: consent of instructor.

236 Toxins and Cellular Injury (4) W of odd years beginning 1991. In-depth examination of potent toxins of animal, microbial, and plant origin that are responsible for cell damage in animals and plants. Mechanisms of cellular toxicity, with focus on the nucleus (nucleic acids), microtubules, mitochondria, and chloroplasts. Same as Environmental Toxicology 205.

247 Insect Reproduction (4) F of every third year beginning fall 1985. Lecture, four hours. Discussion of latest research on gametogenesis, fertilization, parthenogenesis, and early development of insects, with emphasis on genetic aspects in *Drosophila*. Prerequisite: consent of instructor. Open to senior undergraduate students with consent.

248 Insect Embryology (4) F of every third year beginning fall 1986. Lecture, four hours. Analysis of the embryonic development of insects integrating molecular, genetic, and classical approaches. Emphasis is placed on the most recent findings from *Drosophila* molecular genetics. Prerequisite: consent of instructor. Open to senior undergraduate students with consent.

249 Insect Development (4) F of every third year beginning fall 1984. Lecture, four hours. Postembryonic development of insects studied by classical methods as well as by genetic methods in *Drosophila*. Emphasis placed on studies of pattern formation in imaginal discs and regenerating appendages, on the development of the nervous system, and on the endocrine control of development. Prerequisite: consent of instructor. Open to senior undergraduate students with consent.

250 Limb Development, Regeneration, and Evolution (4) F. Explores vertebrate limb development, regeneration, and evolution through directed reading of pertinent current literature concerning both experiment and theory.

251 Developmental Neurobiology (4) S of odd years. Lecture, two hours; discussion, one hour. Developmental biology of the nervous system of vertebrates and invertebrates with emphasis on the cellular events underlying differentiation, morphogenesis, synaptic connectivity, and electrochemical activity. Prerequisite: consent of instructor. May be repeated for credit.

253 Plant Cell Differentiation (4) W of odd years. Lecture, three hours. The cellular and molecular basis of plant cell differentiation. Different areas covered each quarter. Over the course of several years will discuss hormone action, seed protein synthesis and decomposition, cell wall deposition, nitrogen fixation, and chloroplast differentiation. May be repeated for credit.

254 Practical Electron Microscopy (5) W. Laboratory, four hours. Methods of electron microscopy including sample preparation, fixation, embedding, sectioning, staining, EM examination, EM photography, developing, printing, and data analysis. In addition, participants learn to use more than one type of EM including alignment, perform routine EM procedures, and use specialized EM accessory equipment such as an ultramicrotome, vacuum evaporator, and critical point dryer. Prerequisite: consent of instructor.

255 Plant Morphogenesis (4) W of even years. Lecture, three hours. Examination of current problems in plant differentiation and its control, primarily at the tissue and whole plant level. A single major topic will be selected each year and will include such subjects as control of morphogenesis in shoot and root apices, flowering, control of cambial growth, pattern formation, plant embryology, and control of the formation of plant organs in culture. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory Only. May be repeated for credit.

265 Parasitology (4) F, W, S. Seminar, one hour. Topics vary from year to year. Prerequisite: consent of instructor.

285 Advanced Topics in Cell Biology (2) F, W, S. Lecture, two hours. Seminars, lectures, and informal discussions by invited speakers, graduate students, and faculty. Topics vary. Major emphasis in the areas of plant physiology, development, and biochemistry. Required for all graduate students working toward an advanced degree in the area of plant biology in Developmental and Cell Biology. Prerequisite: consent of instructor. May be repeated for credit.

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. Satisfactory/Unsatisfactory Only.

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants. Satisfactory/Unsatisfactory Only.

Department of Ecology and Evolutionary Biology

716 Engineering Building; (714) 856-6006

Walter M. Fitch, Department Chair

Faculty

Mark C. Andersen: Plant-herbivore interactions; quantitative ecology
 Peter R. Atsatt: Plant ecology and evolution
 Francisco J. Ayala: Population and evolutionary genetics
 Albert F. Bennett: Environmental physiology; physiological ecology
 Timothy J. Bradley: Comparative physiology of ion transport epithelia
 Diane R. Campbell: Plant population biology; pollination ecology
 F. Lynn Carpenter: Community ecology; behavioral ecology
 Peter S. Dixon: Phycology

Walter M. Fitch: Molecular and genetic evolution
 Steven A. Frank: Social behavior and evolutionary genetics
 Joseph L. Graves, Jr.: Evolution and physiology of aging in *Drosophila*; cultural diversity and structure of science
 Richard R. Hudson: Theoretical population genetics, molecular genetics, and DNA variation within populations
 George L. Hunt, Jr.: Behavioral ecology, marine ornithology
 Robert K. Josephson: Comparative neurophysiology; muscle physiology
 Harold Koopowitz: Comparative neurophysiology; conservation of endangered plant species
 George V. Lauder, Jr.: Functional vertebrate morphology
 Richard E. Lenski: Coevolutionary biology; microbial ecology
 Richard E. MacMillen: Physiological animal ecology
 Laurence D. Mueller: Theoretical and empirical studies of density-dependent natural selection
 Eloy Rodriguez: Chemical ecology of plant-animal interactions; evolution and function of natural products in desert plants
 Michael R. Rose: Evolution of life histories and genetic systems
 Grover C. Stephens: Comparative animal physiology
 Arthur E. Weis: Evolutionary ecology of plant-insect interactions; plant population biology
 Stephen G. Weller: Plant reproductive ecology; plant population ecology

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.

Primary emphasis in the Department graduate program is placed on training leading to the Ph.D. in Biological Sciences; under exceptional circumstances, a student may be admitted initially to the M.S. program. Most entering students are required to enroll during the first year in a three-quarter graduate core sequence. At the end of the first year, these students complete an oral examination based upon the core courses and other materials the Department might require. Satisfactory performance on this 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 once each quarter. 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 departmental faculty twice each academic year.

Normally, all requirements for the Ph.D. should be completed within five years. No more than six years will be allowed for completion of the program. Advancement to doctoral candidacy by a comprehensive oral examination will be 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 February 1.

Courses in Ecology and Evolutionary Biology

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 (2-2-2) F, W, S. One and one-half hours. Invited speakers present current research in ecology and evolutionary biology. Required of all graduate students. May be repeated for credit. Satisfactory/Unsatisfactory Only.

202A-B-C Ecology and Evolutionary Biology Research Reviews (1-1-1) F, W, S. Seminar, one hour. Current research by graduate students and faculty. Satisfactory/Unsatisfactory Only. Required of all graduate students. 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 Techniques for Instruction: Biological Sciences 104L (1) F. Laboratory, two hours. A training course required of graduate students serving as teaching assistants in Biological Sciences 104L (Physiology). Prerequisite: graduate enrollment in Biological Sciences 104L. Satisfactory/Unsatisfactory Only.

205 Special Topics in Ecology (4) F. Lecture, four hours. Survey of special topics in ecology. Restriction: graduate students only.

206 Special Topics in Evolution (4) W. 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. Restriction: graduate students only.

207 Quantitative Methods in Ecology and Evolutionary Biology (4) S. 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. Prerequisite: at least one quarter of statistics, including regression and analysis of variance. Open to graduate students only.

208 Special Topics in Organismal Biology and Physiology (4) F. Lecture, four hours. A summary of information in organismal biology, comparative and ecological physiology, and the biophysical basis of organismal function for first-year graduate students. Prerequisite: consent of instructor.

209 Theoretical Population Genetics (4) S of even years. Lecture, three hours; discussion, one hour. Selected topics in theoretical population genetics. Topics include multi-locus models, genetic drift, diffusion approximations, temporally and spatially varying environments, and geographically structured populations. Prerequisite: consent of instructor.

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.

211 Evolutionary Quantitative Genetics (3 to 4) W of even years. Lecture, three hours. Maintenance of quantitative genetic variation; natural selection on quantitative traits; estimating components of variance by least-squares and maximum likelihood; inbreeding depression; genotype-environment interactions. Prerequisite: consent of instructor.

212 Ecological Genetics (3 to 4) W of odd years. Lecture, three hours. Natural selection on single-locus and multi-locus traits; sex ratio evolution; evolution of senescence; density-dependent natural selection; evolution of phenotypic plasticity; evolution of habitat preference; evolution of mutualism; coevolution of predator-prey systems; coevolution of competitors. Prerequisite: consent of instructor.

213 Evolution of Genetic Systems (4) S of even years. Lecture, two hours; discussion, two hours. Maintenance of anisogamous sex; origin of eukaryotic sex; transformation; conjugation; transduction; transposons; meiotic drive; sexual breeding systems; parthenogenesis. Prerequisite: consent of instructor.

214 Experimental Evolution of *Drosophila* and Other Model Systems (3 to 4) F of odd years. Lecture, three hours. Evolution of senescence; evolution of life histories by density-dependent natural selection; population dynamics of experimental *Drosophila* systems; genetic variation for population growth rates; evolution of population stability. Prerequisite: consent of instructor.

215 Experimental Evolution of Prokaryotes (3) F of even years. Lecture, three hours. Focus is on use of bacteria, viruses, and plasmids to address fundamental issues in evolutionary biology: origins of mutation and recombination; detection of adaptations; relationship between gene expression and fitness; tests of selectionist/neutralist controversy; evolution of competitive, exploitative, and mutualistic interactions. Prerequisite: consent of instructor.

216 Coevolution (3 to 4) W of odd years. Genetic and ecological influences on interacting populations. Topics include: evolution of competitors, including mechanisms of interference; evolution of exploitative interactions, including resistance and virulence determinants in disease; constraints on escalation; selfish DNA and genomic parasitism. Prerequisite: consent of instructor.

Enrollment in the following courses may be approved for undergraduate students with advanced standing:

224 Seminar in Vertebrate Biology (2 to 4) S of odd years. Seminar, three hours. Topics arranged are consistent with graduate student interest and center around themes in vertebrate physiological ecology, paleontology, and evolution. Prerequisite: consent of instructor.

227 Seminar in Population/Community Ecology (2) F, W, S. Seminar, two hours. Selected topics in population or community ecology (such as island biogeography, evolution of sex ratios, reproductive biology of marine birds) through discussion of current literature and preparation of papers. Prerequisite: consent of instructor. May be repeated for credit.

229 Seminar in Terrestrial Community Ecology (2 to 4) S of odd years. Seminar, three hours. Modern topics in field and theoretical community ecology. Prerequisite: consent of instructor.

230 Advanced Plant Population Biology (4) S of odd years. Lecture, three hours; discussion, one hour. Characteristic aspects of the population of flowering plants, including sexual and asexual reproduction systems; the effect of sessile nature of plants on gene flow, dispersal, and colonization; and the relationship of life history theory to demographic patterns observed in flowering plants. Prerequisite: consent of instructor.

240 Mathematical Population Biology (2-4) S of even years. Seminar, three hours. Mathematical modeling of ecological and evolutionary processes is developed with a view toward teaching methods of theoretical research in ecology and evolutionary biology. Prerequisite: consent of instructor.

245 Plant-Animal Interactions (4) S of even years. Lecture, one hour; discussion, one hour; laboratory, four hours. Ecology and evolution of mutualistic and antagonistic interactions between plants and animals. Topics include pollinator behavior, plant mating systems, plant defense mechanisms, herbivore diet choice, and three trophic level interactions. Field-oriented laboratory includes several Saturday trips. Prerequisite: consent of instructor.

250 Molecular Evolution (4) W of odd years. Seminar, four hours. Recent advances in the study of evolution at the molecular level. Topics include genetic variation in populations, regulatory versus structural-gene evolution; genetic differentiation between populations and species; reconstruction of phylogenetic history; rates of evolution. Prerequisite: consent of instructor.

274 Behavioral Ecology (4) W of odd years. Seminar, three hours. Selected topics in behavioral ecology through discussion of current literature and preparation of papers. Prerequisite: consent of instructor.

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants.

Department of Molecular Biology and Biochemistry

431 Steinhaus Hall; (714) 856-6034
Krishna K. Tewari, **Department Chair**

Faculty

Dana Aswad: Neurochemistry and molecular neurobiology
Barbara K. Burgess: Biochemistry and genetics of nitrogen fixation
Michael G. Cumsy: Mitochondrial biogenesis in yeast; expression and targeting of mitochondrial precursor proteins
Rowland H. Davis: Regulation and genetics of lower eucaryotes
Hung Fan: Animal virology, nucleic acid studies in murine leukemia virus
Charles Glabe: Developmental biology; cell-cell interactions
Gale A. Granger: Cellular immunology; molecular immunology
Barbara A. Hamkalo: Structure of chromosomes; regulation of gene expression
Agnes H. Henschen-Edman: Structure-function relationships in proteins; genetic variants of fibrinogen.
Anthony A. James: Molecular biology of insect vectors of disease; genetics of vector competence.
Jerry E. Manning: Gene sequence organization, eucaryotic DNA; electron microscopy
Ricardo Miledi: Synaptic physiology and molecular neurobiology
Michael B. O'Connor: Developmental biology, gene regulation
Timothy F. Osborne: Biosynthesis and regulation of cholesterol synthesis
Donald Senear: Regulatory energetics in protein-DNA assemblies
Wendell M. Stanley, Jr.: Physical and biological properties of nucleic acids and proteins
Krishna K. Tewari: Chloroplast DNA; replication and transcription
Sujata Tewari: Neuromolecular biology and CNS-acting drugs
Luis P. Villarreal: Animal virology; molecular basis of pathogenesis
Edward K. Wagner: Animal virology, nucleic acid synthesis, and function in infected cells
Robert C. Warner: Molecular biology of nucleic acids; physical chemistry of macromolecules; mechanism of genetic recombination
Clifford A. Woolfolk: General microbiology; enzymology

The Department of Molecular Biology and Biochemistry in the School of Biological Sciences offers graduate study under the administration of the School of Biological Sciences. The curriculum is designed to produce creative and productive scientists who have an in-depth comprehension of modern biochemistry and molecular biology and who are highly competent in a given sub-specialty.

The faculty's research interests include structure and synthesis of nucleic acids and proteins, regulation, virology, biochemical genetics, gene organization, and immunology. The first-year student is required to take a core of advanced courses (203, 204, 205, 206, 207, 208, and 209), to become associated with the laboratories of at least three different investigators, and to attend the 201A-B-C seminar series. During the first year, students are advised by members of the graduate committee. Upon successful completion of the first year, the student is given a comprehensive oral examination to test breadth and depth of knowledge. Although further supplemental work may be recommended, the student normally begins a specific research project with a faculty member in the second year. The student, by passing an oral examination by the end of the third year on the proposed dissertation work, may advance to candidacy for the Ph.D. degree. Students normally complete their degree programs after a total of five years of graduate study. Participation in the seminar series (201A-B-C) and completion of at least one satellite course per year (210-279) for three years are expected of all continuing students. Regular teaching of undergraduates is part of the training of graduate students at all levels. The graduate committee may waive some of the above requirements for candidates for the Master's degree.

Applicants should have adequate undergraduate preparation in calculus, physics, physical chemistry, organic chemistry, and

biochemistry. Students who have not had an adequate physical chemistry course are expected to take Chemistry 130A-B-C by the end of the second year.

Some faculty from the Department of Molecular Biology and Biochemistry are members of an interdisciplinary biophysics and biophysical chemistry group, which is described in a previous section.

Courses in Molecular Biology and Biochemistry

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.

201A-B-C Seminar in Molecular Biology and Biochemistry (2-2-2) F, W, S. Seminar, two hours. Content varies. Presentation of research from departmental laboratories or, when pertinent, of other recent developments. Prerequisite: consent of instructor.

202A-B-C Tutorial in Molecular Biology and Biochemistry (4-4-4) 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.

203 Structure and Biosynthesis of Nucleic Acids (4) F. Lecture, three hours. The structure and properties of nucleic acids. The fundamentals of nucleic acid hybridization and recombinant DNA methodology. Replication and rearrangement of DNA. Prerequisites: Biological Sciences 106 and 107 or the equivalent and Chemistry 51A-B-C or the equivalent. (Coordinator, J. Manning)

204 Structure and Biosynthesis of Proteins (4) F. Lecture, three hours. The structure and properties of proteins. Enzymes and their kinetic properties. Mechanisms of the biosynthesis of proteins. Prerequisites: Biological Sciences 106 and 107 or the equivalent and Chemistry 51A-B-C or the equivalent. (Coordinator, B.K. Burgess)

205 Eucaryotic Gene Expression: Viral and Organelle Genes (4) W. Lecture, three hours. The structure of eucaryotic genes and the role of transcriptional and posttranscriptional processing in their expression. Primary research data on the major DNA and RNA viruses and cellular organelles. Graduate-level knowledge of the biochemistry and molecular biology of macromolecules is required. Prerequisites: Biological Sciences 106 and 107 or the equivalent and Chemistry 51A-B-C or the equivalent. (Coordinator, E. Wagner)

206 Eukaryotic Gene Expression: Chromosomal Genes (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. Prerequisites: Molecular Biology 203, 204, and 205. (Coordinator, B. Hamkalo)

207 Molecular Genetics (4) S. Lecture, three hours. Recombination, genome organization, and gene expression at the molecular level, with emphasis on genetic analysis. Prerequisites: Molecular Biology 203, 204, 205, and 206. (Coordinator, R. Davis)

208 Metabolic Regulation (4) S. Lecture, three hours. A consideration of the molecular mechanisms responsible for the regulation of metabolite flow. Examples are chosen from organisms ranging from bacteria to mammals and include regulation of enzyme content. Prerequisites: Biological Sciences 106 and 107 or the equivalent and Chemistry 51A-B-C or the equivalent. (Coordinator, S. Arfin)

209 Biochemical Methodology (6) S. Lecture, three hours; laboratory, six hours. Introduction to techniques available to the modern biochemist. Opportunity to experience many of the methods available for the isolation and characterization of molecules of biological interest. Experiences are provided in the context of a problem or problems in modern molecular biology, emphasizing the principles behind techniques employed. Prerequisite: consent of instructor. (Coordinator, K. Tewari)

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 Chromosome Structure and Function (4) W every third year beginning 1989. Lecture, three hours; demonstration, one hour. Recent concepts of chromosomal function and structure, exposure to modern electronmicroscopic techniques and their interpretation. Prerequisite: consent of instructor. (Coordinators, Hamkalo and Manning)

212 Molecular Genetics of Gene Expression in Eucaryotes (4) S. Lecture or discussion, two hours. An examination of progress in elucidation of mechanisms controlling gene expression. Prerequisite: consent of instructor.

214 Biosynthesis of Nucleic Acids (4) F every third year beginning 1985. Lecture, three hours. Structure, function, and replication of DNA and RNA in procaryotes and eucaryotes; emphasis on current research. Prerequisite: consent of instructor. (Coordinator, Tewari)

215 Mechanisms of Recombination (3) W every third year beginning 1980. Lecture or discussion, two hours. Molecular mechanisms utilized in genetic recombination. Prerequisite: consent of instructor. (Coordinator, Warner)

216 Comparative Metabolism (4) W of every third year beginning 1984. Lecture, two hours. Assumes a background in the more universal metabolic pathways. Examines metabolic diversity, particularly among the procaryotes, with emphasis on the mechanism of ATP production and important biosynthetic pathways involved in the recycling of elements. Reviews of these topics and specific research articles illustrating individual pathways are read. Prerequisite: consent of instructor. (Coordinator, Woolfolk)

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, Fan)

221 Advanced Immunology (4) S every third year beginning 1983. Lecture, three hours; discussion, one hour. History, techniques, and concepts of humoral antibody formation and cellular immune patterns. Advanced topics in transplantation and tumor immunobiology. Prerequisite: Biological Sciences 121 or consent of instructor. (Coordinator, Granger)

224 Mechanisms of Viral Transformation (4) F every third year beginning 1989. Lecture, three hours. The molecular mechanisms by which RNA and DNA tumor viruses transform cells. Emphasis on current research papers. Prerequisite: Molecular Biology and Biochemistry 205.

226 Animal Virology (4) S every third year beginning 1986. Lecture, two hours. Elements of viral infection, including the role of viruses as potential oncogenic agents. Prerequisite: consent of instructor. (Coordinator, Wagner)

231 Genetic Analysis of Complex Cell Functions (4) F of every third year beginning 1984. Lecture, three hours. The application of genetic and recombinant DNA technology to analysis of bacterial and lower eucaryotic cell structures and functions. Topics, which may vary from year to year, include metabolic pathways, regulatory systems, the cell cycle, protein determination and secretions, assembly of cell structures, organelle biogenesis and other multigenic activities. Prerequisite: consent of instructor. May be repeated for credit. (Coordinator, R. Davis)

264 Colloquium in Biophysical Chemistry (2) W. Colloquium, two hours. Presentation of research topics in biophysics and biophysical chemistry. Faculty and invited speakers address the fundamentals and background of physical approaches to biological problems and the experimental results obtained with them. Supplementary reading required. Prerequisites: Chemistry 130A-B-C, Chemistry 131A-B-C, or equivalent. Graduate standing. Satisfactory/Unsatisfactory Only. Same as Physiology and Biophysics 264 and Chemistry 264. May be repeated for credit.

280 Advanced Topics in Biochemistry and Molecular Biology (3) F. Lecture, five hours. Selected topics in specified areas of concentration, e.g., nucleic acids, protein biochemistry, genetic expression, biochemical

genetics. Specific topics announced in advance. Prerequisites: Biological Sciences 106 and 107 and consent of instructor. Normally taken with Molecular Biology and Biochemistry 205A. Open to advanced undergraduates.

290A-B-C Colloquium in Molecular Biology and Biochemistry (2-2-2) F, W, S. Colloquium, one and one-half hours. Contemporary research problems in molecular biology and biochemistry. Invited speakers present research and/or review topics. Satisfactory/Unsatisfactory Only. May be repeated for credit.

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants.

Department of Psychobiology

231 Steinhaus Hall; (714) 856-6025

Herbert Killackey, **Department Chair**

Faculty

Dana Aswad: Neurochemistry and molecular neurobiology

Carl Cotman: Neurochemistry

Ronald D. Frostig: Systems neurobiology

Robert K. Josephson: Invertebrate neurophysiology

Herbert P. Killackey: Developmental neuroanatomy

Michael Leon: Physiological and behavioral aspects of reproduction and development

Gary S. Lynch: Brain plasticity and behavior

John Marshall: Neuropharmacological approaches to behavioral analysis

James L. McGaugh: Neurobiology of learning and memory

Ricardo Miledi: Synaptic physiology and molecular neurobiology

Rachael Neve: Molecular neurobiology

Ian Parker: Synaptic physiology

Arnold Starr: Cognitive and sensory neuroprocesses

Katumi Sumikawa: Molecular neurobiology

Norman M. Weinberger: Neural bases of attention and learning

Pauline I. Yahr: Behavioral neuroendocrinology

Psychobiology is concerned with the biology of the nervous system and behavior. The Department of Psychobiology 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 of Psychobiology offers graduate training leading to the Ph.D. in Biological Sciences. Graduate students must complete a sequence of core courses (lectures and laboratories) during their first and second years. They also must take a minimum of four advanced courses before graduation and must participate in directed research and teaching each year. To advance to candidacy, the student must prepare a critical review paper in the area of the proposed dissertation research and must pass an oral examination in psychobiology by the end of the third year. Graduation depends on successful preparation and oral defense of a dissertation based on the student's research. Students are expected to complete this program in five years of study.

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. The Department accepts only those students seeking a doctorate, though students who do not successfully complete their course work or do not advance to candidacy may,

with the consent of the faculty, complete a Master's thesis and receive an M.S. degree in Biological Sciences. Applicants with substantial outside commitments that would curtail laboratory research or prolong the time to degree are not accepted. Students are encouraged to take the GRE no later than October. The deadline for application is February 1.

Courses in Psychobiology

200A-B-C Research in Psychobiology (2 to 12 per quarter) F, W, S. Individual research supervised by a specific professor. Prerequisite: consent of instructor.

202 Neural Systems (6). Lecture, four and one-half hours. An analysis of neural systems from an anatomical viewpoint. Emphasis on both gross aspects and cellular aspects of neural function. Prerequisite: Psychobiology graduate student or consent of instructor. May be repeated for credit.

203 Neurochemistry (1-4). Lecture, four and one-half hours. The chemical basis for neural function is addressed. Both intracellular and intercellular aspects of neural function are discussed with an emphasis on central nervous system activity. Prerequisite: Psychobiology graduate student or consent of instructor. May be repeated for credit.

204 Neurophysiology (1-4). Lecture, four and one-half hours. Biophysical mechanisms of membrane potentials, neuronal conduction synaptic transmission, and muscle contraction. Prerequisite: Psychobiology graduate student or consent of instructor. May be repeated for credit.

205 Animal Behavior (1-4). Lecture, four and one-half hours. An examination of species-typical patterns of behavior from the perspective of modern evolutionary thought. Content varies. Prerequisite: Psychobiology graduate student or consent of instructor. May be repeated for credit.

206 Integrative Neurobiology (1-4). Lecture, four and one-half hours. Discussion centers around an integrated view of neural systems, using anatomical, physiological, chemical, and behavioral approaches. Content varies. Prerequisite: Psychobiology graduate student or consent of instructor. May be repeated for credit.

207 Methods in Psychobiology (1-4). Laboratory, four and one-half hours. Histology, neurochemistry, electronics, behavior, and neurophysiology are taught in a laboratory, using modern methods. Content varies. Two sections may be taken concurrently. Prerequisite: Psychobiology graduate student or consent of instructor.

208A-B-C Graduate Core Laboratory (2-2-2) F, W, S. Laboratory, six hours. Use of contemporary techniques in neurobiology and behavioral biology. Neuroanatomy: gross and microscopic techniques for analyzing neural tissue, including neurohistology with normal and experimental material. Neurochemistry: biochemical techniques for analysis of brain tissue, including separation and identification of cellular constituents. Neurophysiology: bioelectronics, electrophysiological methods for single units, multiple units, gross field potential, and the electroencephalogram.

209 Modern Processes in Psychobiology (1-4). Lecture, four and one-half hours. Discussion of various aspects of psychobiological research. Content varies. Prerequisite: Psychobiology graduate student or consent of instructor. May be repeated for credit.

210 Learning and Memory (1-4). Lecture, four and one-half hours. A survey of the biological basis for learning and memory. Prerequisite: Psychobiology graduate student or consent of instructor. May be repeated for credit.

240 Advanced Analysis of Learning and Memory (4) F of odd years. 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.

241 Advanced Analysis of Hormones and Behavior (4). Lecture and seminar, three hours. Relationships that exist among endocrine secretions, the brain, and behavior. The biology of reproduction is covered in detail as are the roles of hormones in development stress and social behavior.

242 Development of Synaptic Functions (4) S. Lecture and seminar, three hours. Analysis of the ontogenetic development of synaptic functions in the brain and peripheral nervous system. Emphasis at the molecu-

lar and cellular levels. Prerequisite: graduate status in Psychobiology or consent of instructor.

243 Advanced Analysis of Comparative and Developmental Neurobiology (4) S of even years. Lecture and seminar, three hours. The vertebrate nervous system approached from both its phylogenetic and ontogenetic history. Emphasis is given to contemporary experimental approaches to selected neuronal systems.

244 Advanced Neurochemistry (4) W of even years. Lecture and seminar, three hours. Integrated survey of the chemical and physiological mechanisms of synaptic transmission. Selected topics include growth and modification of synaptic connections from a chemical viewpoint.

246 Advanced Analysis of Attention and Learning (4) S of odd years. Lecture and seminar, three hours. Consideration of behavioral and neural aspects of attention. Examination of the concept of "attention" from a behavioral point of view, and classical and current approaches to brain mechanisms which form the substrates of behavioral attention.

247 Advanced Integrative Neurobiology (4). Lecture and seminar, three hours. Consideration of selected topics in neurobiology in which multidisciplinary approaches have been used to analyze function.

248A Fundamentals of Evoked Potentials (4). Lecture, two hours. Introduction to the study of the electrical activity of the human brain from the brainstem to the cerebral cortex. Prerequisite: consent of instructor. Same as Social Sciences 252A.

248B Evoked Potential of Sensory and Cognitive Aspects (4). Lecture, three hours. An advanced course on the study of the electrical activity of the human brain concentrating on the cerebral cortex. Prerequisite: Psychobiology 248A or consent of instructor. Same as Social Sciences 252B.

249 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 Physiology and Biophysics 205.

250 Advanced Analysis of Brain and Behavior (4). Analysis of basic mechanisms underlying behavioral change and plasticity. Emphasis on recovery of function after brain injury and neuropharmacological/neurochemical approaches to cellular plasticity.

251 Clinical Neurology for Neuroscientists (4) S of odd years. Presentation of problems of clinical neurology through patient presentation, examination, and discussion. Patients with lesions or defects at various levels of the nervous system are examined.

252 Advanced Analysis of Animal Behavior (4) W of odd years. Lecture and seminar, three hours. Consideration of the adaptive functions of species-typical behavior patterns, as well as their physiological control and ontogeny.

253 Advanced Analysis of Muscle and Other Effectors (4) F of even years. Biophysics and biochemistry of striated muscle, proteins of muscle and their organization, sliding filament model of muscle contraction, calcium as a regulator of contractile activity, structural organization of control systems, neurological control of contractile activity, muscle kinetics, and thermodynamics.

254 Molecular Neurobiology (4) S. Lecture, 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.

255 Topics in Behavioral and Cognitive Neuroscience (2-2). Seminar, two hours. The biological basis of the internal knowledge which influences and in many cases determines behavior. Examination of the foundations of the study of cognitive capacities such as memory, perception, and action.

256 Advanced Topics in Disorders of the Central Nervous System (4) S. Lecture, two hours. Consideration of the clinical characteristics, etiology, and therapeutic interventions in selected disorders of the central nervous system. Principal emphasis on the basic research strategies used to investigate these diseases. Restriction: graduate students only. Same as Anatomy and Neurobiology 211.

259 Cortical Plasticity (4) S. Lecture, two hours; discussion, one hour. Consideration of contemporary research on anatomical, physiological, and

behavioral aspects of plasticity in the cerebral cortex during development, recovery of function and learning, emphasizing visual, somatosensory, and auditory cortices. Prerequisite: consent of instructor.

NOTE: Consent of instructor required for seminar courses numbered 260–275. In order to earn four units of credit, three quarters must be taken. Partial credit may be earned for individual segments.

260 Seminar in Learning and Memory (1.3) F, W, S. Open only to Psychobiology graduate students.

261 Seminar in Neurochemical Basis of Plasticity (1.3) F, W, S. Open only to Psychobiology graduate students.

262 Seminar in Molecular Neurobiology (1.3) F, W, S. Open only to Psychobiology graduate students.

263 Seminar in Comparative and Developmental Neurology (1.3) F, W, S. Open only to Psychobiology graduate students.

264 Seminar in Neurochemistry (1.3) F, W, S. Open only to Psychobiology graduate students.

265 Reproductive Physiology and Behavior (1.3) F, W, S. Open only to Psychobiology graduate students.

266 Seminar in Attention and Learning (1.3) F, W, S. Open only to Psychobiology graduate students.

267 Seminar in Neural Systems (1.3) F, W, S. Open only to Psychobiology graduate students.

268 Seminar in Theoretical Neurobiology (1.3) F, W, S. Open only to Psychobiology graduate students.

269 Seminar in Molecular Neurogenetics (1.3) F, W, S. Open only to Psychobiology graduate students.

270 Seminar in Neuromechanisms (1.3) F, W, S. Open only to Psychobiology graduate students.

271 Seminar in Auditory Neurophysiology (1.3) F, W, S. Open only to Psychobiology graduate students.

272 Seminar in Neurophysiology of Behavior (1.3) F, W, S. Open only to Psychobiology graduate students.

273 Seminar in Comparative Behavior (1.3) F, W, S. Open only to Psychobiology graduate students.

275 Seminar in Cellular and Molecular Neurobiology (1.3) F, W, S. Open only to Psychobiology graduate students.

276 Seminar in Molecular Neuroscience (1.3) F, W, S. Open only to Psychobiology graduate students.

290 Colloquium in Psychobiology (1.3) F, W, S. Lecture, three-fourths hour; discussion, three-fourths hour. Presentation of contemporary research problems in psychobiology and related areas by invited speakers. Satisfactory/Unsatisfactory Only. May be repeated for credit.

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants.

Department of Anatomy and Neurobiology

364 Medical Surge II; (714) 856-6050

Edward G. Jones, **Department Chair**

Faculty

Robert H. Blanks: Vestibular physiology and anatomy

James H. Fallon: Monoamine systems, neuronal growth factors and neurotransmitter interactions

Christine M. Gall: Central nervous system morphological plasticity

Roland A. Giolli: Experimental neuroanatomy; visual system

Stewart H.C. Hendry: Visual cortex structure and plasticity

Paul J. Isackson: Molecular biology of neurotrophic factors

Edward G. Jones: Sensory-motor anatomy and physiology

Glenn H. Kageyama: Development of oxidative metabolism in the brain

Herbert P. Killackey: Developmental neuroanatomy; somatosensory system

Leonard M. Kitzes: Auditory neurophysiology; anatomy; development

W. Ian Lipkin: Molecular biology of neurotropic viruses

Sandra E. Loughlin: Developmental neurobiology of neurotransmitter systems; Parkinson's disease

Diane K. O'Dowd: Molecular biology of membrane ion channels

Charles E. Ribak: Neurocytology; immunocytochemistry of neurotransmitters; neuronal circuitry

Richard T. Robertson, *Department Vice Chair*: Experimental neurobiology; forebrain development

Malcom N. Semple: Auditory neurophysiology

Martin A. Smith: Molecular genetics of extracellular matrix molecules

John E. Swett: Peripheral nervous system, spinal cord, pain mechanisms

Yasuhiro Torigoe: Visual and vestibular regulation of eye movements

The Department of Anatomy and Neurobiology in the College of Medicine offers a doctoral program leading to the Ph.D. degree in Biological Sciences, with specialized research training in the neurosciences. Research programs in the neurosciences include neurotransmitter immunocytochemistry, intracellular physiology, molecular neurobiology, forebrain organization and development, and structure and function of sensory and motor systems. The Department maintains research facilities so that the student can become experienced with the following techniques: electron microscopy; immunocytochemistry; fluorescence histochemistry; neuroanatomical tracing; single- and multiple-unit neurophysiology; and computer analysis of neuroscientific data. Students are encouraged to become proficient in multiple areas of study using interdisciplinary techniques.

Students in the Department of Anatomy and Neurobiology have two major goals. The first goal is to attain the necessary technical skills, theoretical background, and experimental knowledge necessary to conduct innovative, fundamentally important research. The second goal is to gain the knowledge and ability to teach graduate, undergraduate, and professional courses in anatomy and neuroscience. These two goals are achieved through a basic and extended academic program that is tailored to the individual needs of the student.

The core curriculum is designed to provide all students with a fundamental knowledge of modern neurobiology, with an emphasis on morphology, chemistry, and physiology. In the first year, students are required to take selected courses in neuroanatomy and neurophysiology, including a year-long course in neural science techniques. In the second year, students take a year-long course in neural systems, as well as neurochemistry and neuropharmacology courses. Over the usual four-year training period the student is required to complete a practical course in statistics, selected departmental seminar courses, at least two laboratory rotations, and a total of 50 credit hours of research in anatomy. Elective courses in the Department of Anatomy and Neurobiology or other departments on campus may also be taken. The student typically devotes the majority of the first year to taking core courses and about half of the second year to taking electives. Following the first year, the student is expected to act as an assistant in the neuroanatomy core course.

The emphasis of the graduate program in Anatomy and Neurobiology is on research, and a student's participation in laboratory research begins in the first week of graduate study. Students rotate through at least two laboratories during the first two years. By the end of the second year the student and the Graduate Committee select a faculty sponsor who will supervise the dissertation research. A two-part Qualifying Examination at the end of the fall quarter of the third year is given to the student by a Candidacy Committee. The first part consists of a written examination in three of the following areas: molecular and cellular neuroscience, developmental neuroscience, neural systems-sensory, neural systems-motor, and neural systems-other. The second part consists of an oral examination.

The dissertation research is chosen by the student and faculty advisor under guidance of the Dissertation Committee, and an oral research proposal is made. The majority of the third and fourth years is devoted to completing the research and preparing a written dissertation suitable for publication.

An oral defense of the dissertation research before the student's advisor and Dissertation Committee constitutes the final examination. The Ph.D. degree in Biological Sciences is awarded following completion of all the requirements, a process that normally will take four years to complete.

Courses in Anatomy and Neurobiology

200 Research in Anatomy (2-12) F, W, S, Summer. Individual research supervised by a particular faculty member. Prerequisite: consent of instructor. May be repeated for credit.

201 Human Gross Anatomy (8) F. 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.

202 Human Neuroanatomy (7) W. Lecture, four hours; laboratory, four hours. Survey of basic structure of the nervous system, with emphasis on clinical relevance and problem solving. Prerequisites: graduate standing, consent of instructor.

203A-B Human Microscopic Anatomy (3-3) W, S. 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. Formerly Anatomy 203.

205 Aspects of Higher Brain Function (2) S of odd years. Lecture, one hour; discussion, three hours. Seminar course covering structure and functions of the cerebral cortex with an emphasis on sensory and motor systems. 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 Series on Sensory Systems. Seminar, three hours. The anatomy of brain sensory systems.

207A Anatomy/Function of Subcortical Visual and Oculomotor Systems (3) F. Consideration of the anatomy and function of certain portions of the subcortical pathways and nuclei which make up the visual and the oculomotor systems of vertebrates. Neuronal connections between parts of the visual and preoculomotor systems of the brainstem. Recent advances that pertain to vision and the control of eye and neck movements. Prerequisites: chiefly for Anatomy graduate students, consent of instructor. Pass/Not Pass Only.

207B Structure and Function of the Auditory System (3) F of even years. Principles of transduction, stimulus coding, and information transfer in the mammalian auditory system. Functional organization and single neuron physiology of the auditory system emphasized. Students present seminars on relevant topics. Prerequisite: consent of instructor.

208 Neural and Cellular Anatomy. Seminar, three hours. Seminars covering cellular aspects of anatomy.

208A Neurocytology (3) W of even years. Ultrastructure of the nervous system is studied so that an understanding of neuronal function may be gained. Topics include cell body, dendrites, axons, synapses, myelin, glia, blood-brain barrier, meninges, analysis of

neuropil, and experimental techniques. Prerequisite: consent of instructor.

208B Neurotransmitter Pathways: Monoamine Systems (3) F of even years. Detailed review of the organization of central neuroamine pathways. Dopamine, norepinephrine, epinephrine, and serotonin systems analyzed with respect to cell bodies of origin pathways and terminal areas innervated in the brain. Prerequisite: consent of instructor.

208C Cellular Diversification (3) S of odd years. Ultrastructure of cells, including alterations and their organelles, as they relate to the myriad of diverse functions required in a complex functioning organism. Prerequisite: consent of instructor.

208D Advanced Analysis of Comparative and Developmental Neurobiology (3) S of odd years. Vertebrate nervous system approached from both its phylogenetic and ontogenetic history. Emphasis on contemporary experimental approaches to selected systems. Prerequisite: consent of instructor.

208E Functional Anatomy of the Peripheral Nervous System (3) F of even years. Seminar program designed to review critically the modern literature pertaining to the detailed structure and functional organization of peripheral nervous systems of mammals with emphasis on specialization of nerve endings. Prerequisite: consent of instructor.

208F Morphological Plasticity in the Central Nervous System (3) F of even years. Lecture, three hours. Seminar intended to guide a review of the literature on morphological plasticity in the central nervous system. Each student selects a topic for which they will compile a reading list and lead a group discussion. Prerequisite: consent of instructor. May be repeated for credit.

209A-B-C Neural Science Techniques (4-4-4) F, W, S. A year-long laboratory and lecture course on aspects of neural science methodology divided into fall (209A), winter (209B), and spring (209C) sections which may be taken separately with the consent of the instructor. **209A:** Basic neuroanatomical techniques; pathway tracing techniques; fluorescence microscopy and immunocytochemistry. **209B:** Basic electrophysiological techniques; laboratory computer techniques; electron microscopy. **209C:** Developmental neurobiology. Prerequisite: consent of instructor.

209D Seminar in Developmental Neurobiology (3) S. Readings and critical discussion of recent issues in developmental neurobiology. Restriction: open to graduate students and advanced undergraduates.

210A-B-C Systems Neuroscience (4-4-4) F, W, S. Lecture and discussion, six hours. A year-long lecture and seminar course with a systems approach to understanding the nervous system, divided into fall (210A), winter (210B), and spring (210C) sections which may be taken separately with the consent of the instructor. Prerequisite: second-year graduate standing and consent of instructor. **210A:** Chemically defined systems. **210B:** Structure and function of sensory systems. **210C:** Motor, limbic, and cognitive systems.

211 Advanced Topics in Disorders of the Central Nervous System (4) S. Lecture, two hours. Consideration of the clinical characteristics, etiology, and therapeutic interventions in selected disorders of the central nervous system. Principal emphasis on the basic research strategies used to investigate these diseases. Restriction: graduate students only. Same as Psychobiology 256.

Department of Biological Chemistry

Building D, Room 240, Medical Sciences I; (714) 856-6051

Ralph A. Bradshaw, **Department Chair**

Faculty:

Stuart M. Arfin: Genetic and biochemical regulatory mechanisms in mammalian systems

Ralph A. Bradshaw: Structure and function of enzymes and growth factors and their genes

Chris L. Greer: Eukaryotic RNA processing pathways; RNA splicing and gene expression

Michelle M. Hanna: Mechanisms of regulation of gene expression determined by laser crosslinking

- Kenneth H. Ibsen: Properties, distribution, and control of expression of isoenzymes
 Lee McAlister-Henn: Molecular genetics of compartmentalized isozymes
 Calvin S. McLaughlin: Genetic and biochemical approaches to the synthesis of proteins and ribonucleic acids and their regulation in eucaryotic cells
 Masayasu Nomura: Structure, function, and biosynthesis of ribosomes; regulation of gene expression
 Robert E. Steele: Function of proto oncogenes in regulating cell growth, physiology, and morphology
 John J. Wasmuth: Regulation of amino acid metabolism; mammalian cell genetics

Graduate instruction and research opportunities in molecular and cellular biochemistry leading to the Ph.D. in Biological Sciences are offered by the Department of Biological Chemistry in the College of Medicine. The curriculum is designed to prepare students for creative and productive careers in academic science and biotechnology. Faculty research interests focus on the regulation of gene expression (RNA splicing, mammalian chromosomal organization, and nucleic acid-protein interactions) and the regulation of cellular processes (membrane-hormone interactions, regulation of protein synthesis, molecular genetics of metabolic processes, and intracellular protein localization). Students are exposed to technical expertise in all facets of current research in molecular biochemistry from protein chemistry to genetic engineering.

In the first year emphasis is placed on immediate research participation supported by formal course work in protein and nucleic acid chemistry and function, enzymology, biological regulatory mechanisms, cell biology, and somatic cell and molecular genetics. Initial laboratory experiences are achieved by rotation through several laboratories with selection of an advisor occurring at the end of the first year. Student competence and critical thinking in the molecular aspects of biological sciences are tested by comprehensive examination following the first year of study. At the beginning of 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. Completion of the Ph.D. degree normally requires five years.

Applicants for admission are expected to be well-prepared in the biological and chemical sciences. Graduate Record Examination (GRE) General Test and Biology or Chemistry Subject Test scores are required.

Courses in Biological Chemistry

280 Model Systems in Molecular Biology (4) S every third year beginning 1990. Lecture, three hours; discussion one hour. Focuses on the selection of biological models for applications in molecular biology. Emphasis on biological/genetic features of a model system which facilitate the study of gene structure/function, genome organization, cellular and metabolic-compartmentation, and growth control.

285 Advanced Cellular Biochemistry (4) S. Lecture, three hours. Structures and events which are localized at or near the cell membrane. Membrane structure, the extracellular matrix, receptors, and cell-cell interactions.

292 Topics in Biological Chemistry (2) F, W, S. Seminar, two hours. Students present seminars on topics in biological chemistry. Topics vary. Prerequisite: consent of instructor.

299 Physical Chemistry for Biological Sciences (3) F. Lecture, three hours. Covers the essential concepts of physical chemistry with an emphasis on application to the biological sciences. This includes thermodynamics, kinetics, quantum chemistry, spectroscopy, and an introduction to protein chemistry.

Additional courses are taught by faculty from the Department of Molecular Biology and Biochemistry. Graduate students in Biological Chemistry select the courses currently listed in the Department

of Molecular Biology and Biochemistry section. Generally, graduate students are required to take Molecular Biology and Biochemistry 203 through 208 and Biological Chemistry 299. Topics in advanced graduate courses offered by the Department include human genetics, growth factors and oncogenes, yeast molecular genetics, and protein/nucleic acid interactions. Additional course work is based on the interests of individual students.

Department of Microbiology and Molecular Genetics

Building B, Room 240, Medical Sciences I; (714) 856-5261
 Dennis D. Cunningham, **Department Chair**

Faculty

- Dennis D. Cunningham: Control of extracellular proteinases by protease nexins; proteolytic regulation of cell proliferation and differentiation
 Alan L. Goldin: Molecular biology of the sodium channel; neurotropic virus-cell interactions
 George A. Gutman: Immunogenetics; antibody structure and gene organization
 G. Wesley Hatfield: Molecular mechanisms of biological control systems in *Escherichia coli*
 Harris S. Moyed: Molecular genetics of antibiotic persistence in bacteria
 Suzanne B. Sandmeyer: Eukaryotic gene organization; transposable elements and tRNA genes in yeast
 Rozanne Sandri-Goldin: Molecular biology of herpesvirus; regulation of eukaryotic gene expression
 Bert L. Semler: Molecular biology of RNA viruses; expression of cloned DNA copies of poliovirus RNA in eukaryotic vectors
 Eric J. Stanbridge: Molecular genetics of cancer; mycoplasmas; medical microbiology
 Paul S. Sypherd: Molecular genetics of cellular morphogenesis in microorganisms

Graduate instruction and research opportunities in microbiology and molecular genetics leading to the Ph.D. in Biological Sciences are offered by the Department of Microbiology and Molecular Genetics, College of Medicine. The curriculum of the Department is designed to provide advanced training to individuals interested in the molecular basis of genetic regulation in viruses, microorganisms and cultured mammalian cells, and in the structure, genetics, and synthesis of immunoglobulins. The core curriculum focuses on the molecular biology and genetics of viruses and bacteria, the fundamentals of the immune response, the molecular biology of cultured animal cells, and the genetics and physiology of infectious agents.

It is strongly recommended that the student's undergraduate preparation include courses in calculus, physical chemistry, biochemistry, genetics, and general biology. Applicants must take the Graduate Record Examination (verbal, quantitative, and analytical) and the subject section in biochemistry, cell and molecular biology, biology, chemistry, or physics. Before a graduate degree will be awarded, the student must demonstrate competence by course work and examination in biochemistry, physical chemistry, genetics, molecular biology, and various aspects of microbiology and immunology. During the first year, all students in the graduate program spend nine weeks in each of four faculty members' laboratories with the aim of becoming familiar with the research approaches and the laboratory techniques employed in each specific research area. Incoming students review their programs each quarter with the departmental graduate student advisor. During the fall of the third year, each student takes an advancement to candidacy examination. Graduate students are required to take Molecular Biology and Biochemistry 203 through 208 and Microbiology and Molecular Genetics courses. The major remaining requirement for the Ph.D. degree will be the satisfactory completion and oral defense of a dissertation consisting of original

research carried out under the guidance of a faculty member. Students with adequate preparation should be able to complete the Ph.D. within five years.

Courses in Microbiology and Molecular Genetics

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.

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.

210A-B Medical Microbiology (4-6) F, S. Lecture, five hours; laboratory, three hours. Advanced course for medical students in the College of Medicine. Biochemical and genetic properties of infectious agents, identification and behavior of pathogens, activities of toxins, chemotherapy, biochemical genetics of drug resistance, humoral and cell-mediated immunity, introduction to diagnosis, treatment, and epidemiology of infectious diseases. Prerequisites: prior course work in microbiology and biochemistry and consent of instructor.

212 Molecular Biology of Microbial Diversity (4) S. Lecture, three hours. The diversity of the microbial world from a biological and metabolic perspective. Focuses on several microbial groups and their unique way of dealing with their ecological niche. Examples of metabolic preparedness selected from the spore-forming bacteria, the salt-requiring Halobacterium, and other Archaeobacteria, the stalk forming aquatic Caulobacter, and thermophilic bacteria. Prerequisite: consent of instructor.

213 Advanced Prokaryotic Molecular Genetics (3) W. Lecture, two hours. Emphasis on molecular genetics of *Escherichia coli* and bacteriophage lambda. Required for first-year students.

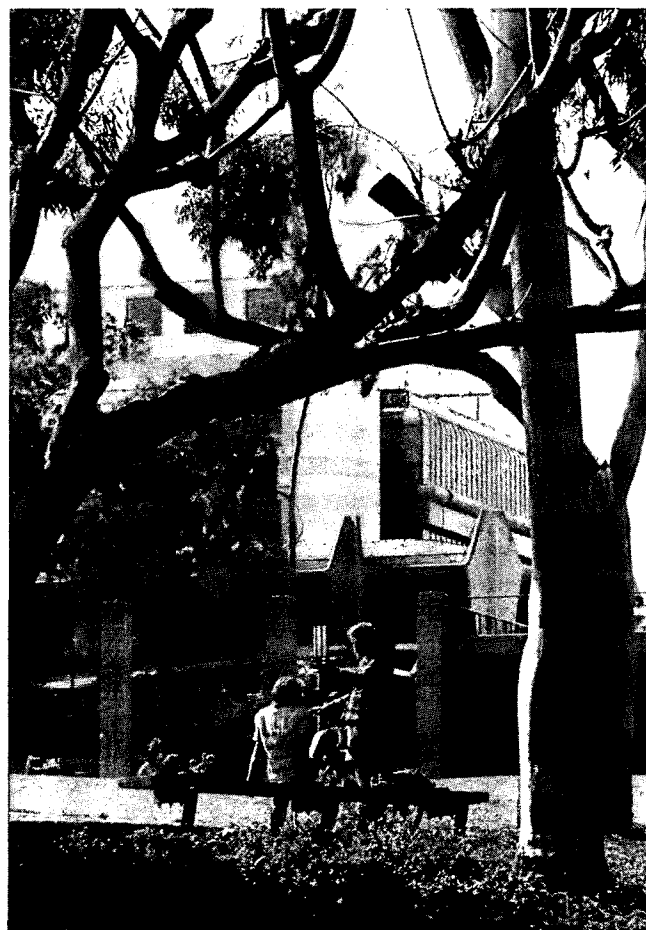
215 Immunology (4) W. Lecture, four hours. Cellular and humoral mediated immunity are the principal means of defense against infection by pathogenic microorganisms, viruses, and host cells. Topics include antibody-antigen reactions, molecular and cellular aspects of antibody formation, immunoglobulins and their genes, B- and T-cell differentiation, and the cellular basis for immune responses. Required for first-year students. Prerequisite: consent of instructor.

216 Pathogenic Microbiology (4) S. 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.

217 Special Topics in Molecular Virology (4) F. Lecture, two hours; seminar. An advanced course which focuses on the mechanisms of gene regulation in animal viruses and on the molecular basis of viral pathogenesis. Prerequisite: consent of instructor.

218 Advanced Eukaryotic Molecular Genetics (4) S. Lecture, three hours. A comprehensive analysis of eukaryotic gene regulation. Studies of positive and negative regulation of RNA polymerase II transcription utilizing SV40, adenovirus, and herpes simplex virus as model systems and including the interaction of cisacting signals and transacting factors. RNA polymerase III studies utilizing *Drosophila* tRNA and 5S RNA genes as model systems. Prerequisite: consent of instructor.

219 Medical Virology (4) S. 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 various groups and role of the immune system in virus infections. Prerequisite: consent of instructor.



The 200,000-square-foot Biological Sciences II building, scheduled to open in summer 1991, will house laboratories and offices.

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.

260 Introductory Molecular Genetics (2) W. Selection and development of experimental approaches to basic problems in molecular biology. Theoretical considerations in selecting a particular experimental approach are given. Student presentations drawing on scientific papers using different experimental strategies to solve a common problem, such as DNA sequence analysis. Required for first-year students.

280A-B-C Tutorial in Microbiology and Molecular Genetics (2-2-2) F, W, S. Tutorial, two hours. Presented by various members of the faculty; relates current laboratory research to the literature.

Department of Physiology and Biophysics

Building D, Room 340, Medical Sciences I; (714) 856-5863

Scott E. Fraser, **Department Chair**

Faculty

Kenneth M. Baldwin: Hormonal and exercise factors regulating biochemical properties of muscle

Marianne Bronner-Fraser: Developmental neurobiology; migration and differentiation of the avian neural crest

Michael D. Cahalan: Ion channels in the nervous and immune systems

Scott E. Fraser: Developmental neurobiology and pattern formation; development and plasticity of the lower-vertebrate visual system; gap junctions in tissue patterning

Alan L. Goldin: Molecular biology of neural channels and receptors

Harry T. Haigler: Cellular and molecular mechanisms by which EGF stimulates cell replication

James E. Hall: Molecular aspects of ionic conductance in membranes; channel reconstitution

Daniel Hollander: Gastrointestinal physiology, aging, and nutrient absorption

Russell E. Jacobs: Peptide-membrane interactions; MRI in developmental biology

Janos K. Lanyi: Bioenergetics of membrane transport by bacterial retinal proteins

Kenneth J. Longmuir: Metabolism and intracellular transport of lipid in mammalian cells; metabolism of pulmonary surfactant

Larry E. Vickery: Enzyme mechanisms and regulation of steroid hormone biosynthesis

Stephen H. White: Membrane structure; physical chemistry of membranes and lipid bilayers

Graduate instruction and research in physiology and biophysics leading to the Ph.D. in Biological Sciences is offered by the Department of Physiology and Biophysics, College of Medicine. The Department provides research opportunities in the molecular biophysics of membranes and proteins; endocrinology; molecular and cell biology; developmental neurobiology; pulmonary and exercise physiology. The core curriculum provides the student with a broad background in physiology and biophysics and the closely related fields of cell biology and biochemistry. Elective courses permit in-depth exploration of particular areas. Interdisciplinary dissertation research involving the research of more than one faculty member is encouraged.

Prerequisites for admission normally include a bachelor's degree in one of the biological sciences, physics, chemistry, mathematics, or engineering, as well as undergraduate courses in calculus, organic and physical chemistry, biochemistry, and advanced biology (e.g., neurophysiology, cell biology, neurobiology, psychobiology). Up to two prerequisites may be fulfilled as first-year electives. GRE Aptitude and Advanced tests are required. Preference will be given to those students who have prior research experience.

The Department admits about three highly qualified students each fall. The program emphasizes original research, and students are expected to become involved in the research of the Department as early as possible. The core program includes graduate courses in physiology, biophysics, biochemistry, and cell biology. After the first year, training continues through in-depth coverage of topics of faculty expertise. These advanced physiology courses combine discussion with laboratory exercises. Students participate in a research seminar designed to strengthen research techniques and present as well as attend the weekly colloquium in physiology. The third and fourth years are spent primarily in research. Each student must submit a written dissertation on an original research project and successfully defend this dissertation in an oral examination.

Incoming students receive academic advising from the Department Graduate Advisor until such time as they choose a dissertation advisor. The faculty conducts quarterly reviews of all continuing students to ensure that they are maintaining satisfactory progress within their particular academic program. Students who have completed all necessary prerequisites should be able to complete the Ph.D. within five years.

A comprehensive examination is administered at the end of the first year. The examination is based upon material in the advanced physiology series and is designed to test the student's ability to organize a body of knowledge and to think critically. Sometime during the third year, the student presents a seminar on a topic assigned by the formal candidacy committee. Following the seminar, the committee critically examines the student's qualifications for the successful conduct of the doctoral dissertation. Advancement to candidacy for the Ph.D. is recommended to the Dean of Graduate Studies upon the unanimous vote of the committee.

Some faculty from the Department are members of an interdisciplinary biophysics and biophysical chemistry group, which is described in a preceding section.

Courses in Physiology and Biophysics

200 Research in Physiology and Biophysics (2-12 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.

201 Introduction to Physiology Research (1-4 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.

203 Review of the Literature of Physiology and Biophysics (1). Students review papers in the current literature and present ideas contained therein to other students and faculty members. May be repeated for credit.

204A Cellular Biochemistry (3) F. Lecture, one hour; discussion, one hour; laboratory, four hours. Use of modern protein chemistry methods to partially purify and characterize an enzyme. Techniques include subcellular fractionation, protein solubilization, ion-exchange chromatography, polyacrylamide gel electrophoresis, immunoblotting, and enzyme assays. Prerequisites: graduate standing in Biological Sciences and consent of instructor.

204B Cellular Neurobiology (3) W. Lecture and discussion, three hours. The physiology of single cells. Emphasis on the cell biology of neurons, electric currents in cells, and sensory transduction. Computer simulations permit exploration of current flow in neurons. Students make an oral presentation. Prerequisites: graduate standing in Biological Sciences and consent of instructor.

204C Concepts of Biophysics (3) S. Lecture, three hours; laboratory, one hour. Properties of biological molecules and ions in solution; the behavior of biological molecules at interfaces; the concepts of kinetic order and kinetic rate theory; an introduction to basic principles of spectroscopy. Prerequisites: graduate standing in Biological Sciences and consent of instructor.

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 Psychobiology 249.

206A-B Introduction to Medical Physiology (6-6) 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. Prerequisite: consent of Department.



Each quarter more than 450 undergraduate students and 200 graduate and postdoctoral students participate in independent research programs.

207A-B-C Research Seminar (2-2-2) F, W, S. Students present public seminars on either laboratory research conducted during the quarter or on a topic from current literature chosen by the student and approved by the instructor. Students must attend other students' seminars. Prerequisite: consent of instructor.

220 Physiology of Muscular Activity (3) W of odd years. Lecture, one hour; discussion, three hours. Lectures, tutorials, and readings on hormonal, neural, and activity-related factors regulating phenotypic expression in skeletal and cardiac muscle. Topics include organelle components regulating the contractile process; energy metabolism; protein synthesis and degradation; hormones; neural and mechanical factors. Prerequisite: consent of instructor.

232 Physiology of Ion Channels (3) F of odd years. Lecture, one hour; discussion, three hours. Molecular and biophysical properties of ion channels in excitable and nonexcitable cells. The physiological role of ion channels in a variety of cellular behaviors. Demonstrations in a hands-on workshop format include patch clamp recording, reconstitution of channels into lipid bilayer membranes, and analysis of single channel currents. Intended for advanced students of neurophysiology and the life sciences. Prerequisite: consent of instructor.

250 Molecular Differentiation of the Nervous System (3) W of even years. Lecture, one hour; discussion, three hours. A structured seminar with assigned readings and roundtable discussions. Focuses on molecules whose activities determine the most highly differentiated functions of nerve cells—excitability, sensitivity to transmitters and hormones, and connectivity. Prerequisite: consent of instructor.

251 Molecular Physiology (3) S of even years. Lecture, one hour; discussion, three hours. Applications of molecular biology and recombinant DNA technology in physiology. Topics include DNA sequencing, restriction endonucleases, cloning vehicles, cDNA and genomic libraries, expression of recombinant proteins, site-directed mutagenesis, and cellular perturbation methods. Prerequisite: consent of instructor.

261 Membrane Structure and Cell Biophysics (3) F of even years. Lecture, one hour; discussion and laboratory demonstrations, three hours. Basic physical chemistry, methods of biophysical research including magnetic resonance and X-ray diffraction, physical basis for membrane structure, membrane biogenesis. Analysis of key papers in the field of membranes. Demonstrations and exercises. Prerequisite: consent of instructor.

264 Colloquium in Biophysical Chemistry (2). Colloquium, two hours. Presentations of research on topics in biophysics and biophysical chemistry. Faculty and invited speakers address the fundamentals and background of physical approaches to biological problems and the experimental results obtained with them. Supplementary reading required. Prerequisites: Chemistry 130A-B-C, Chemistry 131A-B-C, or equivalent. Satisfactory/Unsatisfactory Only. Same as Molecular Biology and Biochemistry 264 and Chemistry 264. May be repeated for credit.

281 Signal Transduction (3) S of odd years. Lecture, one hour; discussion, three hours. Students read and discuss original manuscripts that describe mechanisms by which extracellular signals are transduced across plasma membranes and mechanisms by which cellular response machinery (e.g., ion channels, phospholipases, protein kinases, and the mitogenic pathway) is activated. Prerequisite: consent of instructor.

290 Colloquium in Physiology (1-1-1) F, W, S. Seminar, one and one-half hours. Contemporary research problems in physiology. Research students, faculty, and other invited speakers introduce research and review topics. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory Only. May be repeated for credit.

299 Dissertation in Physiology and Biophysics (2-12 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.

School of Fine Arts

Robert Hickok, **Dean**

105 Fine Arts Trailer
Student Affairs: (714) 856-6646

The School of Fine Arts is dedicated to the study, creation, and performance of the arts within the context of their history and theory. The School consists of the Departments of Art History, Dance, Drama, Music, and Studio Art. Each department offers both undergraduate and graduate degree programs, with the exception of the Department of Art History which currently offers the B.A. degree only. The degree programs include extensive studio, workshop, and performing experiences, theoretical and historical studies, and work in criticism. In addition, the School offers a General Interdisciplinary Program which includes significant work in several Fine Arts departments.

All of the School's departments are located in the Fine Arts Village, facilitating daily interaction among student and faculty in all Fine Arts disciplines. The Village includes studio and classroom facilities, four theatres, a concert hall, the University Art Gallery, the Visual Resources Collection, the Gassman Electronic Studio, and a television studio. Professionally managed and staffed theatrical production shops and box and publicity offices supporting the School's extensive production and performance schedule also are located in the Village.

Fine 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. Many of the School's productions take place in the new Irvine Barclay Theatre, a fully equipped, 750-seat performing facility that opened in fall 1990.

In addition to the artists, scholars, and performers who are members of the Fine Arts faculty, visits by distinguished guest artists/teachers are a regular 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 Fine Arts Student Affairs. The staff also assists the faculty in providing academic counseling to Fine Arts students.

Degrees

Art History	B.A.
Dance	B.A., M.F.A.
Drama	B.A., M.F.A.
Fine Arts	B.A., M.F.A.
Music	B.A., B.Mus.
Studio Art	B.A., M.F.A.

Special Programs of Study

Concentration in Medieval Studies

The concentration in Medieval Studies allows undergraduate students in the Schools of Fine 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.

Concentration in Religious Studies

The undergraduate Concentration in Religious Studies encourages students to examine religion and religious phenomena in the context of several disciplines. See the School of Humanities section for additional information.

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 more than 85 host universities and colleges in 33 countries throughout the world. See the Education Abroad section for additional information.

3-2 Program with the Graduate School of Management

Outstanding Fine Arts majors who are interested in a career in arts management may wish to apply for entry into the Graduate School of Management's 3-2 Program. Students normally apply for this program early in their junior year. See the Graduate School of Management section for further 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 grade point average of 3.0 or better. More specific criteria include, but are not limited to, cumulative grade point average in the major, curriculum breadth, and extracurricular efforts such as service to the major or the School, and creative/artistic activities. See the individual departments for additional information. In keeping with the Academic Senate Resolution no more than 12 percent of the graduating seniors may receive honors.

The School of Fine 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 Fine Arts Student Affairs Office.

Elftmann Scholarship. Provides \$500 annually to one student in the School of Fine Arts.

Kalos Kagathos Foundation Scholarship. (1) Full scholarship awarded to an incoming freshman majoring in Drama; selected by audition. (2) Partial scholarship awarded to continuing students in Drama; selected by audition.

Laguna Arts Festival Scholarship. Amount varies annually; approximately \$2,000 in recent years. Awarded at the discretion of the Dean of the School of Fine Arts to students with extraordinary research or study opportunities.

Stephen Lyle Memorial Scholarship. Awarded to continuing students in Drama; selected by audition.

Carole McGahan Memorial Scholarship. For Dance majors.

Orange County Philharmonic Society Scholarship Program. All recipients are selected by the UCI Music faculty scholarship committee through an audition process. Awards are primarily for incoming Music performance students. (1) Ladislav Reday Memorial Scholarship. Awarded to a Music major in any instrument. (2) David Lee Shanbrom Memorial Scholarship. Awarded to an outstanding Music student in any instrument. (3) Winifred W. Smith Music Scholarship. Awarded to a student with stringed instrument specialization.

Timothy Phillips Memorial Scholarship. Provides \$2,000 annually to a Music major.

Marjorie and Robert Rawlins Scholarship. Approximately \$1,500-\$2,000 annually, awarded to one string or piano student by audition with the Music faculty scholarship committee.

Harry and Majorie Slim Memorial Scholarship. Provides \$1,000 annually to a Music student.

Gregory Donnell Smithe Memorial Scholarship. Awarded to a violoncello or string student.



A variety of choral ensembles offered by the Department of Music include the California Chamber Singers, Concert Choir, Madrigal Singers, University Chorus, and Jazz Singers. Some groups participate in international concert tours.



Studio experiences in the Dance program build progressively on ballet techniques and extend through contemporary, historical, and ethnic dance.

Elizabeth and Thomas Tierney Scholarship. Provides \$5,000 annually; \$1,000 awarded to one student in each of the School's five disciplines. (Art History, Dance, Drama, Music, Studio Art). Students nominated by the faculty; final selection made by the UCI scholarship committee.

UCI Town and Gown Scholarships. A total of \$4,000–\$5,000 annually; awarded to Music students by audition with the Music faculty scholarship committee.

Ralph Van Beek Memorial Scholarship. Amount varies annually; awarded to a Music major.

Undergraduate Program

Requirements for the Bachelor's Degree

University Requirements: See pages 50–53.

School Requirements: None.

Departmental Requirements: Refer to individual departments.

Graduate Program

The School of Fine Arts offers programs leading to the Master of Fine Arts degree in Fine Arts with a concentration in Music, to the Master of Fine Arts degree in Dance, to the Master of Fine Arts degree in Drama, and to the Master of Fine Arts degree in Studio Art. The primary activity of the School of Fine Arts is performance—the creative act. Research activities are concerned with illuminating performance and inspiring 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 program is, thus, to produce literate artists who are responsive to intellectual stimuli, who are capable of integrating knowledge into creative acts, and who are disciplined to the point of freedom. It is the strong belief of the School that intellectual integrity and professional excellence cannot exist without each other.

Admission to the Program

Applications are accepted for fall quarter admission only, and ordinarily must be completed by March 1 as the number of graduate students that can be admitted to the School of Fine Arts is limited. Applicants are advised to arrange for auditions, interviews, and the submission of portfolios, compositions, and dossiers, as appropriate, by March 1. Students applying for scholarships and fellowships should do so by February 1, and are also encouraged to apply for financial assistance through the Financial Aid Office. The School of Fine 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. The student should discuss with this advisor the scope of undergraduate preparation to determine any areas which may need strengthening if full benefit from graduate study is to be derived.

Fine Arts General Interdisciplinary

105 Fine Arts Trailer; (714) 856-6646
Stephen Barker, **Chair**

Faculty

Stephen Barker, Ph.D. University of Arizona, *Chair of Fine Arts General Interdisciplinary Studies and Department Chair and Associate Professor of Drama*

Keith Fowler, D.F.A. Yale University, *Associate Professor of Drama and Head of Directing*

The program in general interdisciplinary studies is designed for students who wish to investigate the various disciplines in fine arts. Although participation in studio classes is required, the program emphasizes the study of the history, theory, and criticism of the arts in four of the School's departments. The nature of the program provides each student the opportunity to plan a uniquely individual course of study with the approval of the Chair or an appropriate advisor. Because the general interdisciplinary program is designed for students with a strong sense of personal direction and a desire for an academic appreciation of the arts, students wishing to enter the program must submit a statement of purpose to the General Interdisciplinary Studies Committee prior to the quarter in which they intend to declare their major. Admission to the program is based upon the statement of purpose and upon the student's prior record of high academic performance. Upon completion of this program, students will be awarded the B.A. in Fine Arts with General Interdisciplinary as the area of concentration.

The University's Education Abroad Program offers students the opportunity to study abroad. European study centers of particular interest to the Fine Arts (General Interdisciplinary) major which are strong in the history, theory, and criticism of the arts are located in Vienna, Austria (music, art), Copenhagen, Denmark (medieval studies), Paris, France (French critical thought and film criticism), Göttingen, West Germany (music, archaeology), and Bologna, Italy (music, art, drama). Arts courses also are part of the general curriculum in other study centers in France, Hungary, Spain, Israel, and Sweden, in addition to arts courses in English-language study centers in the United Kingdom, Ireland, Australia, New Zealand, Kenya, Ghana, Egypt, and India.

Requirements for the Bachelor's Degree

University Requirements: See pages 50–53.

School Requirements: None.

Program Requirements

Three one-year surveys in three different areas of the arts selected from Art History 40A-B-C, Dance 90A-B-C, Dance 191A-B-C, Dance 192A-B-C, Drama 40A-B-C, or Music 40A-B-C; nine performance/studio courses (e.g., acting, ballet, drawing, chorus, orchestra); six upper-division courses in the history, theory, and criticism of the arts in at least two areas of the arts, including Fine Arts 130; a senior thesis; two years in a language other than English at University level or equivalent competence; related courses in disciplines other than fine arts are encouraged.

Sample Program for Freshmen

Fall	Winter	Spring
Survey Course	Survey Course	Survey Course
Studio Course	Studio Course	Studio Course
Foreign Language	Foreign Language	Foreign Language
English and Comparative Literature WR39A	English and Comparative Literature WR39B	English and Comparative Literature WR39C

With the exception of the Fine Arts courses listed here, Fine Arts Interdisciplinary majors choose courses, in accordance with the program requirements, from those listed under Art History, Dance, Drama, Music, and Studio Art.

Courses in Fine Arts

Lower-Division

40A-B-C Selected Interdisciplinary Topics (4-4-4) F, W, S. Studies in the historic and theoretical interrelationships of artistic disciplines, including such fields as dance, music, art, and/or drama; and investigation of their underlying social and aesthetic bases and the influence of one art upon another. Topics vary.

Upper-Division

100A-B-C The Senior Thesis (4-4-4) F, W, S. Planning, drafting, writing, and presentation of an academic thesis which interrelates two or more artistic disciplines. Prerequisite: consent of instructor. Open only to Fine Arts Interdisciplinary majors.

130 Crossing Boundaries: An Introduction to Interdisciplinary Study (4) F, W, S. Investigation of interdisciplinary thought and action beginning with the nature of discipline and extending to the relationship between science and art, politics/society and art, and struggles within the arts between theory and practice and across apparently segregating boundaries. Prerequisite: upper-division standing. May be taken for credit three times as topics vary.

140A-B-C Selected Interdisciplinary Topics (4-4-4) F, W, S. Studies in the historic and theoretical interrelationships of artistic disciplines, including such fields as dance, music, art, and/or drama; an investigation of their underlying social and aesthetic bases and the influence of one art upon another. Topics vary. Prerequisite: upper-division standing.

Department of Art History

245 Fine Arts Administration; (714) 856-7471

Anna Gonosová, **Department Chair**

Faculty

Laura Allen, Ph.D. University of California, Berkeley, *Assistant Professor of Art History* (Japanese art) (on leave winter 1992)

George Bauer, Ph.D. Princeton University, *Professor of Art History* (Renaissance/Baroque art)

Linda Bauer, Ph.D. Institute of Fine Arts, New York University, *Associate Professor of Art History* (Renaissance/Baroque art)

Ann Bermingham, Ph.D. Harvard University, *Associate Professor of Art History* (Modern European art, American art, history of photography) (on leave fall 1991 and winter 1992)

Hara Georgiou, Ph.D. Bryn Mawr, *Professor of Art History* (Ancient art)

Anna Gonosová, Ph.D. Harvard University, *Department Chair and Associate Professor of Art History* (Byzantine and Medieval art)

Judy Ho, Ph.D. Yale University, *Assistant Professor of Art History* (Chinese art) (on leave fall 1991)

Sally Stein, Ph.D. Yale University, *Assistant Professor of Art History* (American art, history of photography)

The Art History curriculum is designed to provide a comprehensive study of art as a humanistic discipline. The program is concerned with both the formal structure of the visual arts and their function within society. Students majoring in the history of art thus are urged to take appropriate courses in classics, history, literature, and philosophy, as well as in other areas of the fine arts. All majors also are encouraged to study a second language beyond the minimum departmental requirement of two years in a single foreign language at the University level.

The University's Education Abroad Program offers students the opportunity to study abroad. Study centers of particular interest to Art History majors are in Vienna, Venice, Padua, Madrid, Cairo, Jerusalem, Leningrad, Latin America, France, Great Britain, Ireland, and Scandinavia. In addition, students focusing in Asian art may be interested in programs in China, India, Korea, Indonesia, Thailand, or Japan; and Chengchi University in Taipei offers a track in English that is devoted to Chinese art and art history. Special scholarships are available for Pacific region programs.

Careers for the Art History Major

A Bachelor's degree in Art History is excellent preparation for pursuing either a career as an art historian, art conservator, or museum curator, or professional study in an entirely different discipline. Art History majors have gone on to graduate and professional school to study art history, archaeology, architecture, law, library science, business (in some cases with special focus in the fine arts), or teacher education. The study of the history of art is a valuable part of a liberal education that provides a means of looking at the history and culture of both the past and the present.

Requirements for the Bachelor's Degree

University Requirements: See pages 50–53.

School Requirements: None.

Departmental Requirements for the Major

Art History 40A-B-C or 42A-B-C; eight upper-division courses in art history, with a minimum of one course selected from each of the following groupings: Art History 100-109 (Ancient history), 110-119 (Medieval history), 120-129 (Renaissance/Baroque history), 130-149 (Modern history), and 150-164 (Asian history); Art History 190; two quarters of Art History 198; two years in a language other than English at University level that has been approved by the faculty, or equivalent competence; and two Studio Art courses (which may be taken Pass/Not Pass).

Students should register for Art History 190 as soon as possible after completing the University lower-division writing requirement.

Sample Program for Freshmen

Fall	Winter	Spring
Art History 40A/42A	Art History 40B/42B	Art History 40C/42C
Foreign Language	Foreign Language	Foreign Language
English and Comparative Literature WR39A	English and Comparative Literature WR39B	English and Comparative Literature WR39C
Elective	Elective	Elective

Departmental Requirements for the Minor

One year-long introductory sequence (either Art History 40A-B-C or 42A-B-C), one upper-division course in each of the following course groupings: Art History 100–109 (Ancient history), 110–119 (Medieval history), 120–129 (Renaissance/Baroque history), 130–149 (Modern history), and 150–164 (Asian history); and one quarter of Art History 198.

Courses in Art History

Lower-Division

Lower-division courses are designed to provide the student with a comprehensive introduction to the history of art and the premises upon which such a history is based.

35A-B-C Contemporary Artists (4-4-4) F, W, S. A three-quarter course which explores the issues and artists of contemporary times, with special emphasis on the art of the last 40 years. Twentieth-century art movements such as Cubism, Expressionism, Dada, Surrealism, Constructivism, and Neo-Platism are examined as precursors of contemporary styles and attitudes. Same as Studio Art 35A-B-C. (IV)

40A-B-C History of Western Art (4-4-4) F, W, S, Summer. A one-year survey of the history of Western art from its beginnings to the modern world. (IV, VII-B)

42A-B-C History of Asian Art (4-4-4) F, W, S. An introductory survey of the arts and architecture of Asia including India, Southeast Asia, China, Korea, and Japan. (IV, VII-B)

46 The Nature of Architecture (4). Selected topics determined by individual faculty members dealing with the development of styles and schools in Western architecture and covering all periods.

Upper-Division

Upper-division courses in the history of art are intended to expose the student to a wide variety of aims and methods—archaeological, historical, and critical—in the study of art. Topics within a given area may therefore vary from quarter to quarter, and courses may be repeated for credit when this occurs. Art History 40A-B-C or 42 A-B-C are prerequisites for courses numbered from 100 through 189.

100 Studies in Ancient Art (4). Topics in Egyptian, Mesopotamian, and Prehistoric art of the Mediterranean area treated with specific reference to relevant cultural and historical settings. Specialized courses in Greek art are also taught.

103 Studies in Greek Art (4) F, W, S. Traces the development of Greek architecture, sculpture, and vase painting from the Prehistoric period through the end of the fifth century B.C. Research on painting and sculpture is related to the collections of the J. Paul Getty Museum of Art.

107 Studies in Roman Art (4) F, W, S. Topics in Hellenistic and Roman art; stresses historical and political background. The collections of the J.P. Getty Museum of Art are used as the basis for research papers.

110 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.

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.

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.

120 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: the art of Venice, Renaissance architecture.

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.

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.

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: from Rubens to Rembrandt.

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.

133 Studies in Nineteenth-Century Art (4) F, W, S. Varying topics including Romanticism, Realism, Impressionism, Post-Impressionism, and Symbolism. Individual artists' works are studied in the context of broader cultural and historical movements.

140 Studies in Twentieth-Century Art (4) F, W, S. Varying topics, including Cubism, Futurism, Constructivism, Dada, Surrealism, and Expressionism. Individual artists' works are studied in the context of broader cultural and historical movements.

150 Studies in Asian Art (4) F, W, S. Topics include such major artistic traditions as Japanese narrative painting, Indian sculpture, Chinese ceramics, and gardens of China and Japan.

152 Chinese Art and Archaeology (4) F, W, S. A study of the rich archaeological finds in mainland China (including mausolea, wall-paintings, and mortuary objects in bronze, pottery, and jade), and the dissemination of Chinese tomb art in early Korea and Japan. May be taken for credit three times as topics vary.

153 Studies in Early Chinese Painting (4) F, W, S. An examination of major traditions in landscape and figure painting from the fourth through the fourteenth centuries and the parallel developments in art theory.

154 Studies in Later Chinese Painting (4) F, W, S. New developments in the Ming and Qing periods: the Wu and Che Schools, the Orthodox Masters, the Individualists and Eccentrics.

159 Japanese Buddhist Art (4) F, W, S. Traces the history of Buddhist Art in Japan from its introduction in the late sixth century through developments in subsequent periods.

161 Studies in Early Japanese Painting (4) F, W, S. Varying topics examining major developments in the history of Japanese painting from the seventh through the seventeenth centuries. May be repeated for credit as topics vary.

162 Studies in Later Japanese Painting (4) F, W, S. A consideration of major developments in the history of Japanese painting from 1600 to 1900 A.D. May be repeated for credit as topics vary.

165 Studies in American Art (4) F, W, S. Selected topics determined by individual faculty members exploring historical developments in Colonial, eighteenth-, nineteenth-, and twentieth-century art. Examples: Colonial architecture, American Modernism. May be taken for credit three times as topics vary. Formerly Art History 160.

175 Studies in Primitive Art (4) F, W, S. Varying topics on the art and culture of tribal societies, for example, North American Indians. May be repeated for credit as topics vary. Formerly Art History 170.

180 Criticism of Art (4) F, W, S

183 History of Photography (4) F, W, S. Varying topics, including surveys of nineteenth- and twentieth-century photography and of individual photographers and movements. Example: Stieglitz and the Photo-Secession.

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: Art History major, junior standing, and completion of the lower-division writing requirement.

All advanced problems, special studies, and tutorial courses may be repeated for credit.

196 Tutorial in Art History (1-4) F, W, S, Summer. Independent research topics directed by individual faculty members. May be repeated for credit four times.

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 member in charge. Examples: Caravaggio and his followers, Dunhuang painting. Prerequisite: consent of instructor or Art History major.

Department of Dance

101 Humanities Trailer Complex; (714) 856-7283

Nancy Lee Ruyter, **Department Chair**

Faculty

Don Bradburn, Columbia Broadcasting System (CBS-TV), *Lecturer in Dance* (ballet, choreography, video choreography)

Mary Corey, M.A. University of California, Riverside, *Certified Professional Labanator, Assistant Professor of Dance* (dance history, modern dance, dance notation and reconstruction)

Diane Diefenderfer, Soloist, Los Angeles Ballet, Eglevsky Ballet Company, Frankfurt Ballet Company, *Certified Instructor in Pilates Technique, Lecturer in Dance* (ballet, pointe, Pilates)

Donna France, A.A. Fullerton College, *Lecturer in Dance* (tap, jazz)

- Sheryl Freeman, M.A. University of California, Riverside, *Lecturer in Dance* (dance history, modern dance, choreography)
- Israel "El" Gabriel, Assistant Artistic Director, Bat Dor Dance Company of Israel, *Lecturer in Dance* (ballet, modern, pas de deux)
- Paul Hodgins, D.M. University of Southern California, *Assistant Professor of Dance* (music for dancers, choreography, history, research methods)
- Dianne Howe, Ph.D. University of Wisconsin, Madison, *Assistant Professor of Dance* (philosophy, aesthetics, and criticism, modern dance, choreography, research methods)
- Jillana, Principal Dancer, American Ballet Theatre, New York City Ballet, *Lecturer in Dance* (ballet, repertory, pas de deux)
- Donald McKayle, Choreographer/Director, concert, theatre, film, television, *Professor of Dance* (choreography, modern dance, graduate choreographic advisor)
- James Penrod, M.F.A. University of California, Irvine; C.M.A. Laban Institute of Movement Studies, *Professor of Dance* (ballet, modern, dance notation, choreography, movement analysis)
- Janice Gudde Plastino, Ph.D. University of Southern California, *Professor of Dance* (modern, kinesiology/anatomy, research methods, choreography, dance science/medicine)
- Barbara Bailey Plunk, M.G.M., NBC-TV, American School of Dance, *Lecturer in Dance* (ballet, teaching of dance, theory, administration)
- Juan Rios, M.A. Stanford University, *Lecturer in Dance* (Mexican dance)
- Antonia Rojas-Kabakov, Jose Greco Company, *Lecturer in Dance* (Spanish dance)
- Larry Rosenberg, B.A. University of California, Los Angeles; Eliot Feld Ballet, *Lecturer in Dance* (ballet, repertory, pas de deux)
- Kathy Rump, M.F.A. University of California, Irvine *Lecturer in Dance* (Jazz)
- Nancy Lee Ruyter, Ph.D. Claremont Graduate School, *Department Chair and Associate Professor of Dance* (dance history, modern dance, Spanish dance, choreography, and research methods)

The Department of Dance provides students with an educational environment in which performance opportunities, creative projects, and theoretical studies complement and reinforce each other. The Department prepares students for various professions in the field of dance by providing a curriculum and an atmosphere in which the student may create, perform, analyze, and study dance from historical, philosophical, and scientific perspectives. The program provides studio experience in the knowledge and techniques of classical ballet, contemporary dance, historical dance forms, and selected ethnic dance cultures. Theoretical studies include history; philosophy, aesthetics, and criticism; notation; teaching methods; and dance science/medicine.

The traditional technique of classical ballet constitutes a craft and style for the dancer that serves not only as a basis for the logical training of the body, but also as a basic language of movement for the choreographer. While ballet is emphasized by the Department, it is balanced by work in other genres. Studio experiences build progressively on the techniques of ballet and extend through the contemporary idioms of modern and jazz as well as through historical and ethnic dance forms. The aim is to develop kinetic resources, precision, flexibility, creativity, and freedom in a coordinated and intelligently responsive dancer.

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 and beginning of training for those students who plan to pursue careers in the academic, scientific, or administrative fields of dance.

Careers for the Dance Major

A career in dance requires excellent training and extraordinary discipline, tenacity, and dedication. Beyond the perhaps more obvious careers in professional dance performance, choreography, and teaching, the major in Dance also serves as a basis for graduate study or job opportunities in fields such as dance history,

dance science, dance reconstruction, dance criticism, and dance video. Related fields, such as arts administration, law in relation to the arts, arts therapies, design and production, and music also offer positions for the individual trained in dance. Students who are interested in a career in physical therapy or some aspect of dance medicine/science may find that a major in dance, with breadth course work in chemistry, physics, biology, and mathematics, to be excellent preparation for further study.

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 San Francisco, Frankfurt, and Stuttgart Ballets); in modern dance companies (including the Bella Lewitzky, Lar Lubovitch, and Bat-Dor Companies); and in musicals (including Jerome Robbins' *Broadway*, and the original cast of *Chorus Line*); and in films, television, and theatre. Others have entered the professions of dance education, dance anthropology, medicine, law, and psychology.

Requirements for the Bachelor's Degree

University Requirements: See pages 50–53.

School Requirements: None.

Performance Requirements

Students planning to major in Dance should develop basic ability in techniques of ballet, modern, and jazz dance forms. A placement examination is required of all entering dance majors. It is given during Welcome Week in fall quarter and determines which levels of ballet, modern, and jazz classes the student will take. For advanced standing applicants to UCI (entering students with 12 units or more), the placement examination will also be used to determine whether or not the student may major in Dance and the minimum number of years it will take to complete degree requirements.

By the end of the sophomore year, students must have selected one of the five specializations. Both the performance and the choreography specializations require a special audition and faculty approval. Students wishing to select the performance specialization may audition at the end of their freshman year; those interested in the choreography specialization audition their work at the end of their sophomore year. Advanced standing applicants for the choreography specialization must show examples of their work either on videotape or by prearranged audition.

Inasmuch as the level of performance ability generally determines the length of time in study, and all transfer students must anticipate meeting the total performance requirements for the B.A. degree, students deficient in level of performance in comparison to their level of academic study should be prepared to extend their studies in order to meet performance requirements.

Departmental Requirements for the Major

Dance 2 (Injury Prevention/Technique Analysis); Dance 21A-B (Music for Dancers); Dance 180A-B (Dance Notation); six units of Drama 101 (Technical Theatre), except for the History specialization which requires only two units of Drama 101; and completion of the requirements for one of the five specializations listed below.

Choreography Specialization:

One course selected from Dance 11A, 11B, 11C (Mexican Dance), 12A, 12B, 12C (Spanish Dance), 110 (Ethnic Dance), or 114 (Historical Dance); Dance 60A-B-C (Choreography I), must be taken in the sophomore year; Dance 90A-B-C (Dance History); Dance 100 (Kinesiology for Dance); Dance 137A or 147 (Ballet or Modern Dance Repertory); Dance 162A-B-C or 164A-B-C (Choreography II or Video Choreography); one original choreographed work must be presented in both the junior and senior years in Dance 171 (Dance Workshop); Dance 185

(Philosophy, Aesthetics, and Criticism of Dance); Drama 30A (Beginning Acting); Drama 165 (Music Theatre Workshop). *Technique:* Dance 132A-B-C and 133A-B-C (Ballet II and III); Dance 142A-B-C and 143A-B-C (Modern II and III); Dance 51A-B-C and 152A-B-C (Jazz I and II).

Hispanic Dance Specialization:

Dance 11A-B-C (Mexican Dance); Dance 12A-B-C (Spanish Dance); Dance 60A (Choreography I); Dance 91A-B-C (Dance in the Hispanic World); 111A-B-C (Mexican Dance II) or 112A-B-C (Spanish Dance II); Dance 125A-B (Teaching of Dance); two courses in Dance 197 (Independent Study), one four-unit research and writing project and one four-unit choreographic work for presentation at the undergraduate Dance Workshop Concert; two courses selected from Dance 193 (Selected Topics in Dance), when the content is Hispanic dance, or History 42, 126, 138, 160, 161, 163, 169, or Spanish 110, 117, 119, 120, 130, 131, 133, 134, 160, or Anthropology 162A, 162N, or Comparative Culture 130D; Spanish 1A-B-C and 2A-B-C or equivalent. *Technique:* Dance 31A-B-C (Ballet I); Dance 41A-B-C (Modern I); two years of study selected from Dance 132A-B-C and 133A-B-C (Ballet II and III), 142A-B-C and 143A-B-C (Modern II and III), or 152A-B-C and 153A-B-C (Jazz II and III).

History Specialization:

One course selected from Dance 11A, 11B, 11C (Mexican Dance), 12A, 12B, 12C (Spanish Dance), 52 (Tap I), 110 (Ethnic Dance), or 150 (Tap II); Dance 60A (Choreography I); Dance 90A-B-C (Dance History); two quarters of Dance 114 (Historical Dance) with two different topics; Dance 162A or 164A (Choreography II or Video Choreography); Dance 191A-B-C or 192A-B-C (History of World Dance or History of Theatre Dance); Dance 185 (Philosophy, Aesthetics, and Criticism of Dance); two quarters of Dance 199 (Senior Thesis); Art History 40A; three courses selected from Art History 40B-C, Music 40A-B-C, or Drama 40A-B-C. *Technique:* Dance 31A-B-C and 132A-B-C (Ballet I and II); Dance 41A-B-C and 142A-B-C (Modern I and II); Dance 51A-B-C (Jazz I).

Performance Specialization:

One course selected from Dance 11A, 11B, 11C (Mexican Dance), 12A, 12B, 12C (Spanish Dance), 110 (Ethnic Dance), or 114 (Historical Dance); Dance 60A (Choreography I); Dance 90A-B-C (Dance History); Dance 100 (Kinesiology for Dance); Dance 139 (Partnering); Dance 137A or 147 (Ballet or Modern Dance Repertory); Dance 185 (Philosophy, Aesthetics, and Criticism of Dance); Drama 30A (Beginning Acting); Drama 165 (Music Theatre Workshop). *Performance:* one faculty choreographed dance concert, Dance 170 (Dance Performance); two undergraduate dance workshops, Dance 171; two M.F.A. performances, Dance 172; Dance 174 (UCI Dance Ensemble); Dance 175 (Dance Touring Ensemble). Students must demonstrate proficiency in at least two dance forms in these performances. *Technique:* one quarter of Dance 52A-B-C or 150A-B-C (Tap I or II); Dance 132A-B-C and 133A-B-C (Ballet II and III); Dance 142A-B-C and 143A-B-C (Modern II and III); either Dance 134A-B-C or 144A-B-C (Ballet IV or Modern IV); Dance 152A-B-C and 153A-B-C (Jazz II and III).

Teaching Specialization:

One course selected from Dance 11A, 11B, 11C (Mexican Dance), 12A, 12B, 12C (Spanish Dance), 52 (Tap I), 110 (Ethnic Dance), or 150 (Tap II); Dance 60A-B-C (Choreography I); Dance 90A-B-C (Dance History); Dance 100 (Kinesiology for Dance); Dance 123 (Dance Accompaniment); Dance 125A-B (Teaching of Dance); Dance 185 (Philosophy, Aesthetics, and Criticism of Dance); Drama 165 (Music Theatre Workshop); work as an assistant in a technique class for one quarter (work must be approved by the student's faculty advisor). *Technique:*

Dance 132A-B-C and 133A-B-C (Ballet II and III); Dance 142A-B-C and 143A-B-C (Modern II and III); Dance 51A-B-C and 152A-B-C (Jazz I and II).

Sample Program for Freshmen

Fall	Winter	Spring
Dance 31A	Dance 31B	Dance 31C
Dance 41A	Dance 41B	Dance 41C
English and Comparative Literature WR39A	English and Comparative Literature WR39B	English and Comparative Literature WR39C
Breadth	Breadth	Breadth
Breadth	Breadth	Breadth

Program Requirements for the Minor

Dance 21A (Music for Dancers); Dance 90A, 90B, 90C (Dance History); Dance 100 (Kinesiology for Dance). *Performance:* two to four units selected from Dance 170 (Dance Performance), 171 (Dance Workshop), or 172 (Master of Fine Arts Concert). *Technique:* Dance 132A-B-C (Ballet II); Dance 142A-B-C (Modern II); one course selected from Dance 11A, 11B, 11C (Mexican Dance), 12A, 12B, 12C (Spanish Dance), 52A, 52B, 52C (Tap I), 110 (Ethnic Dance), or 150A, 150B, 150C (Tap II).

Residency Requirement for the Minor: A minimum of four of the upper-division courses required for the minor must be taken at UCI.

Master of Fine Arts Program

Degree Offered

M.F.A. in Dance, with specialization in choreography, history and research, or teaching/administration.

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. Candidates must meet the minimum requirements for the B.A. degree in Dance at the Irvine campus of the University of California. A paper of 500 words or more on a dance subject and proposals for three choreographic works that could be completed in the graduate program must be submitted for the file. Proof of practical ability in ballet, modern, and other dance forms must be provided by personal audition on the announced date in Winter Quarter. Also on this date, applicants must present a prepared five-minute choreographed piece: a solo performed by the applicant, a work for a small group, and/or a videotape of the applicant's choreography. Interviews with faculty are conducted following the audition.

Teaching Assistantships

Graduate students are encouraged to apply for teaching assistantships in areas such as notation, dance science/medicine, history, music for dancers, choreography, ethnic, dance video, philosophy, 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. Each student is accepted into an approved emphasis.

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 teaching this consists of a practical and comprehensive project concerned with the teaching of dance. For the history and research specialization, a written thesis in a chosen area of research must be prepared.

This thesis is to be defended in a one-hour oral examination which may also test the candidate's general knowledge in the area.

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. Not 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. All graduate students in Dance are required to take one production-running crew assignment the first year they are in residence.

Choreography Specialization:

One course in teaching of dance (Dance 225); six courses chosen from any graduate or upper-division technique course; one year of graduate choreography (Dance 261A-B-C); two courses in graduate projects/productions (Dance 285); one course in movement analysis (Dance 282); one course in philosophy, aesthetics, and criticism (Dance 283); one quarter in video choreography (Dance 264); one course in choreographic resources (Dance 292); one course in musical resources (Dance 222); one course in thesis (Dance 286); one course in ethnic dance (Dance 210) or historical dance (Dance 114); one course in proseminar in dance history (Dance 296); and one elective course chosen with the consent of the graduate advisor.

For the choreography specialization, graduate projects choreographed in residence (new and original) are to consist of the production of one group work and one solo piece in the first year, and a major work in the second year. Additionally, a work or work-in-progress must be presented at six quarterly choreography/repertory workshop performances. The thesis is a philosophical argument supporting the second year's choreographic production.

History and Research Specialization:

Six courses chosen from any graduate or upper-division technique courses; one course in graduate project/production (Dance 285); one course in movement analysis (Dance 282); one course in bibliography and research (Dance 284); one course in philosophy, aesthetics, and criticism (Dance 283); two courses in thesis (Dance 286); one course in choreographic resources (Dance 292); one course in musical resources (Dance 222); one course in dance and related arts (Dance 293); one course in period and style (Dance 294); one course in ethnic dance (Dance 210) or historical dance (Dance 114); one course in proseminar in dance history (Dance 296); and three elective courses chosen with the consent of the graduate advisor.

For the history and research specialization, research skills and writing ability are required. Students in this emphasis write an historical research or critical thesis or produce a concert based on historical treatise material supported by a smaller written work.

Teaching/Administration Specialization:

One course in kinesiology (Dance 201); one course in teaching of dance (Dance 225); one course in administration and management (Dance 226); one course in musical resources (Dance 222); six courses chosen from any graduate or upper-division technique course; one course in graduate choreography (Dance 261A); one course in graduate project/production (Dance 285); one course in movement analysis (Dance 282); one course in bibliography and research (Dance 284); one course in period and style (Dance 294) or in dance and related arts (Dance 293); one course in thesis (Dance 286); one course in proseminar in dance history (Dance 296); one course in philosophy, aesthetics, and criticism (Dance 283); and two elective courses normally chosen from upper-division or graduate dance courses.

For the teaching/administrative specialization, graduate projects will consist of, in the first year, experience in the field with a supporting paper and/or experience in administration. In the second year, a major thesis is required that presents an in-depth study of some aspect of dance education.

Courses in Dance

Lower-Division

NOTE: Some courses are not offered every year. Please check with the department advisor.

2 Injury Prevention/Technique Analysis (2). The analysis, management, and prevention of dance injuries. Analysis of body types and technical ability and the means by which to improve dance ability. Formerly Dance 25.

11A-B-C Studio Workshop in Mexican Dance I (2-2-2) F, W, S. Principles of Mexican folk dance including basic movement techniques, rhythms, regional dance forms and styles, and cultural context. May be taken for credit three times. Formerly Dance 55A-B-C.

12A-B-C Studio Workshop in Spanish Dance I (2-2-2) F, W, S. Principles of Spanish dance with focus on basic movement techniques, castanet work, and introduction to the genres of flamenco, folk, classical, and neoclassical dance forms. May be taken for credit three times. Formerly Dance 54A-B-C.

14A-B-C Social Dance Forms (2-2-2). Contemporary and historical forms. 14A: Current ballroom, disco, and Western square dance forms; 14B: Latin ballroom dances; 14C: Dances from the 20s, 30s, and 40s. May be repeated for credit once. Formerly Dance 56A-B-C.

21A-B Music for Dancers (4-4). 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.

22 Studio Tutorial in Music for Dancers (1 to 4) F, W, S. Advanced instruction in music for dance. Prerequisites: Dance 21A-B. May be repeated for credit once.

30A-B-C Studio Workshop in Ballet I (2-2-2) F, W, S, (30) Summer. Beginning ballet: principles of the Classical tradition developed from Noverre, Petipa, and Cecchetti. Pass/Not Pass Only.

31A-B-C Studio Workshop in Ballet I (2-2-2) F, W, S, (31) Summer. Beginning ballet: principles of the Classical tradition developed from Noverre, Petipa, and Cecchetti. Open to Dance majors or nonmajors by audition. May be repeated for credit.

34 Men's Studio Workshop in Ballet (2) F, W, S. Emphasis on men's traditional ballet, techniques, and movements. Prerequisites: Dance 31A-B-C. May be repeated for credit.

40A-B-C Studio Workshop in Modern I (2-2-2) F, W, S, (40) Summer. Beginning modern dance: principles of modern tradition developed from Graham, Humphrey, and Wigman. Pass/Not Pass Only.

41A-B-C Studio Workshop in Modern I (2-2-2) F, W, S, (41) Summer. Beginning modern dance: principles of modern tradition developed from Graham, Humphrey, and Wigman. Open to Dance majors or nonmajors by audition. May be repeated for credit.

44 Weight Training for Dancers (.7). Principles and theories of weight training specifically designed for the dancer. Special programs are devised to strengthen problem areas in the dancer's body.

50A-B-C Studio Workshop in Jazz I (2-2-2) F, W, S, (50) Summer. Beginning jazz: principles of jazz dance and contemporary forms incorporating the personal point of view of the instructor. Prerequisites: Dance 40A-B-C. Pass/Not Pass Only.

51A-B-C Studio Workshop in Jazz I (2-2-2) F, W, S. Beginning jazz: principles of jazz dance and contemporary forms incorporating the personal point of view of the instructor. Prerequisites: Dance 40A-B-C. Open to Dance majors or nonmajors by audition. May be repeated for credit.

52A-B-C Workshop in Tap I (2-2-2) F, W, S. Beginning tap: principles of rhythm and basic tap steps. Formerly Dance 52.

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.

90A Dance History IA (4) F. Introduction to the history of dance from prehistory through the Middle Ages. (IV)

90B Dance History IB (4) W. The history of dance in the western tradition from the Renaissance through the nineteenth century. Prerequisite: Dance 90A. (IV)

90C Dance History IC (4) S. The history of dance in the western tradition: the twentieth century. Prerequisites: Dance 90A-B. (IV)

91A-B-C Dance in the Hispanic World (4-4-4) F, W, S. History and current state of Hispanic dance with particular attention to Spain and Mexico. **91A:** Dance traditions in Spain and her colonies to 1898. **91B:** Ritual, folk and social dance genres: twentieth-century survivals and developments. **91C:** Theatrical genres: adapted folk and social dance; ballet; modern. (IV, VII-B)

92 Dance Culture of Mexico (4) W. A study of dance developments in Mexico including indigenous dance from pre-conquest times to the present; Spanish influences during the colonial era; the development of *Mezitzo* dance; and present day *folklorico*. (VII-B)

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.

101 Anatomy for Dance (4) F, W, S, Summer. Survey of human anatomy for dance majors. Covers basic principles of human anatomy, including survey of the tissues, organ system, principal anatomical features. Emphasis on musculoskeletal system and its application to dance.

102 Screening of the Dancer (4) F, W, S, Summer. Methods and analyses of the preparticipation physical screening of the dancer to improve performance and identify possible injury and physical problems before extensive dance performance. Prerequisites: Dance 100 and 101.

103 Pilates Technique I (2-2) F, W, S. Introduction to Pilates Technique. Use of the Universal Reformer and mat work. Basics of the technique emphasizing alignment, breath control, correction of muscular imbalances.

110 Ethnic Dance (2). Studio workshop of dances and movement sources of specified countries or areas. May be taken for credit six times as topic varies.

111A-B-C Studio Workshop in Mexican Dance II (2-2-2) F, W, S. Intermediate Mexican folk dance including movement techniques, rhythms, regional dance forms and styles, and cultural context. May be repeated for credit once.

112A-B-C Studio Workshop in Spanish Dance II (2-2-2) F, W, S. Intermediate Spanish dance including movement, techniques, castanet work, rhythms, and continued development of flamenco, folk, classical, and neoclassical styles and forms. May be repeated for credit once.

114 Historical Dance (2-2-2). Style, technique, and theory of historical dance forms. Basic theory of dance notation. Performance of a complete dance required. Formerly Dance 156.

123 Dance Accompaniment (4). Examination of technique and etiquette of instrumental accompaniment for dance in lecture and studio environments. Keyboards, percussion, and other instruments are demonstrated. Prerequisites: Dance 21A-B.

125A-B Teaching of Dance (4-4) W, S. **125A:** Pedagogy. The pedagogy of dance forms. **125B:** Practicum. The application of theory in the studio. Formerly Dance 111A-B.

126 Field Study in the Teaching of Dance (2). Students teach eight classes off campus in supervised situations. Requires an accompanying paper documenting the field experience. Prerequisites: Dance 125A-B; consent of instructor. Formerly Dance 114.

127A-B Costume Design for Dance (4-4). Costume design and construction specific to the body in motion. Theoretical study and practical execution.

130A-B-C Pointe Class (2-2-2) F, W, S, (130) Summer. 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 repeated for credit.

131 Mime (1). Combination of vocabulary and instruction in improvisatory mime as well as conventional mime gesture used in the classical ballet repertory. Formerly Dance 159.

132A-B-C Studio Workshop in Ballet II (2-2-2) F, W, S, (132) Summer. Intermediate ballet and beginning pointe work: principles of Classical tradition developed from Noverre, Petipa, and Cecchetti. Prerequisites: Dance 31A-B-C or audition.

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.

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 or audition.

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 or audition.

136 Studio Tutorial in Ballet (2) F, W, S. Advanced instruction in ballet technique. Prerequisites: Dance 133A-B-C or consent of instructor. May be repeated for credit.

137A-B-C Ballet Repertory (2-2-2) F, W, S. Rehearsal and performance of repertoire from established ballets for three quarters. Studio and public performances presented quarterly. Prerequisites: Dance 132A-B-C. May be repeated for credit.

138 Character Dance (1). A dance style mainly based upon the national traditions of the Polish, Russian, and Hungarian dance techniques as used in classical ballet repertoire. Character or jazz shoes required. Prerequisites: Dance 31A-B-C. May be repeated for credit.

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: Dance 41A-B-C.

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.

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.

146 Studio Tutorial in Modern (2) F, W, S. Advanced instruction in modern dance technique. Prerequisites: Dance 143A-B-C or consent of instructor. May be repeated for credit.

147 Modern Dance Repertory (2-2-2). Rehearsal and performance of repertoire from established modern dance choreographers; i.e., Lewitzky, Graham, Limon, Humphrey, and others. Studio and public performance presented. Prerequisites: Dance 142A-B-C. Not offered each quarter.

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. Formerly Dance 150.

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. Prerequisite: Dance 150 and consent of instructor. May be repeated for credit once.

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: Dance 51A-B-C.

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.

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 repeated for credit.

156 Studio Tutorial: Tap (2-2-2) F, W, S. A summarization of beginning techniques using basic principles of rhythm. Prerequisite: consent of instructor.

157 Studio Tutorial in Jazz (2) F, W, S. Advanced instruction in jazz styles and techniques. Prerequisites: Dance 153A-B-C or consent of instructor. May be repeated for credit.

160 Improvisation (2-2). 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. Formerly Dance 148.

162A-B-C Choreography II (4-4-4) F, W, S. 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.

163A-B-C Choreography III (4-4-4) F, W, S. Directed choreographic projects. May include choreography for groups. Projects may be presented in public concert. Prerequisites: Dance 162A-B-C.

164A-B-C Video Choreography (4-4-4) F, W, S. Introduction and overview of video dance, choreography for the camera, and documentation of existing stage choreography. History and aesthetics of dance on video and basics of technical equipment, video techniques, and editing. A major final project is required.

168 Studio Tutorial in Choreography (4-4-4) F, W, S. Prerequisites: Dance 163A-B-C.

170 Dance Performance (1 to 4). Rehearsal and performance in a faculty-choreographed production. By audition only. May be repeated for credit once.

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.

173 Composer-Choreographer Workshop (2-2). Choreographers and composers collaborate under the supervision of dance and music faculty to produce a work for the Dance Workshop Concert. Prerequisite: consent of instructor.

174 UCI Dance Ensemble Performance (1 to 4). Performance with the UCI Dance Ensemble. Prerequisite: consent of instructor. May be repeated for credit once.

175 Dance Touring Ensemble (1 to 4). Student performance group tours Northern and Southern California for 10 to 14 days. All forms of dance are utilized in a lecture/performance format. Faculty-directed, student/faculty choreographed. Prerequisite: audition, consent of instructor. May be repeated for credit once.

176 Ballet Folklorico de UCI (1 to 4) F, W, S. Rehearsal and performance with the Ballet Folklorico de UCI. Dances from various regions of Mexico are presented throughout the year for campus and off-campus events. Prerequisite: consent of instructor. May be taken for credit 12 times.

177 UCI Spanish Dance Ensemble (1 to 4) F, W, S. Rehearsal and performance with the UCI Spanish Dance Ensemble. Flamenco, regional, classical, and neoclassical Spanish dances are presented throughout the

year for campus and off-campus events. Prerequisite: consent of instructor. May be taken for credit 12 times.

179 California Theatre Ballet (2) F, W, S. Repertory and performances with the California Theatre Ballet. By audition only. May be repeated for credit. Pass/Not Pass Only.

180A-B-C Dance Notation (4-4-4) F, W, S. **180A-B:** Beginning to intermediate principles of Labanotation, score reading, and dictation.

180C: Principles of Labanotation, movement analysis, and selected other notation systems. Prerequisites: Dance 132A-B-C or equivalent, or consent of instructor. Formerly Dance 80A-B-C.

181 Tutorial in Dance Notation (4-4). Formerly Dance 195.

185 Philosophy, Aesthetics, and Criticism of Dance (4) W. Introduction to the aesthetic and philosophical theories of dance in performance. Based upon this foundation, principles of dance criticism are applied to dance performance. Prerequisites: satisfaction of the lower-division writing requirement and Dance 90A, 90B, 90C.

191A-B-C History of World Dance (Specified Areas from Prehistoric to Contemporary) (4-4-4) F, W, S. Offered alternate years with Dance 192A-B-C.

192A-B-C History of Theatre Dance (Specified Areas from Neoclassical and Modern) (4-4-4) F, W, S. Offered alternate years with Dance 191A-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.

194 Tutorial in History of Dance (4). May be repeated for credit.

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 (4-4-4) F, W, S. Directed research for senior Dance majors focusing on dance history. Research consists of a substantial essay on dance history. A reconstructed performance may be required. Pass/Not Pass Only.

Graduate

200 Graduate Dance Kinesiology (4) F. A physical analysis of movement based upon human anatomy. Bones and musculature are examined. Introduction of movement concepts, analysis of dance technique, and resultant muscle imbalances are explored as they relate to anatomy and the dancer. Prerequisite: graduate standing.

201 Seminar in Kinesiology for Dance (4) F. Brief introduction to biomechanics, physiology of exercise and equipment, movement principles, and their application to dance techniques. Prerequisite: Dance 290.

202 Seminar in Dance Medicine (1 to 4). Survey of dance medicine literature and research. Discussion of current developments in the field. Prerequisite: consent of instructor. May be repeated for credit.

203 Seminar in Theories of Dance (4). Directed research projects. Prerequisite: consent of instructor. Formerly Dance 281.

210 Graduate Studio: Ethnic Dance (2) F, W, S. Principles, techniques, and styles of selected genres of ethnic dance such as those of Mexico, Spain, Japan, or other cultures. Prerequisite: consent of instructor. May be taken for credit six times.

221A-B Graduate Music for Dancers (4-4) F, W. Detailed analysis of the various relationships between music and dance; structural, harmonic, and orchestration analysis; developing kinesthetic rhythmic acuity; enriching musical communicative skills.

222 Musical Resources (4) F. Detailed study of music as it relates to dance. A historical overview of musical form, style, and other elements. Analysis of various affinities between music and dance. Practical applications. Prerequisites: Dance 21A-B.

225 Seminar in the Teaching of Dance Techniques (4-4). Principles and theories of teaching dance techniques. Supervised presentation and teaching of technique class. Formerly Dance 211.

226 Administration and Management: Dance (4). Introduction to practice and theory of administration of dance companies, dance departments, and dance schools. Formerly Dance 212.

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-C Graduate Choreography (4-4-4) F, W, S. Review of basic principles of composition based on Noverre, Horst, and Humphrey. Overview of new trends and methods. Major thrust is on creation of several works based upon movement studies. May be repeated for credit.

264 Video Choreography (4). Directed choreographic projects for the video camera. Video techniques which create the hybrid art form called video dance. Production of an individual video choreography project. Prerequisites: Dance 164A-B-C.

280 Graduate Dance Notation (4). Theories of elementary Labanotation related to motif and structural dance movement analysis and dance reconstruction from notated dance scores. Provides practical experience in reading and writing Laban Dance Notation.

282 Seminar in Movement Analysis (4) W, S. Theories of movement analysis and nonverbal communication applied to dance. Prerequisite: Dance 280 or equivalent.

283 Philosophy, Aesthetics, and Criticism (4-4). Discussion of aesthetics and philosophy as they specifically apply to dance. Advanced critical skills are presented. Written critiques of concerts and performances are required. Prerequisite: Dance 284. Formerly Dance 291.

284 Bibliography and Research (4) F. Survey of dance literature; research styles for writing in dance publications. May be repeated for credit. Formerly Dance 290.

285 Graduate Projects (4-4-4-4-4-4). Projects may be educational, choreographic, scientific, historical, or philosophical in scope and must have faculty advisor approval. Formerly Dance 240.

286 Thesis (4-4-4-4-4). 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. Formerly Dance 260.

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. Formerly Dance 295.

290 Graduate History of Dance (4) F, W, S. Survey of selected period of Western dance history: prehistory through the Middle Ages; the Renaissance through the mid-nineteenth century; or 1850 through the twentieth century. May be taken for credit three times as topic changes. Prerequisite: consent of instructor.

292 Choreographic Resources (4). A core course of studies centered on the investigation of choreographic resources in art, drama, literature, and poetry, from the classical into the contemporary traditions. Students must satisfy choreographic assignments drawn from drama, opera, and other theatrical sources. May be repeated for credit.

293 Dance and Related Arts (4). A core course of study on the natures of the performing arts, with particular relevance to the relationship between dance and its sister arts. May be repeated for credit.

294 Period and Style: Studio Workshop (4). Advanced studies in the theory, history, style, and technique of one of the following periods of

Western dance: Medieval, Renaissance, Baroque, or nineteenth-century. May be repeated for credit.

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. Prerequisite: Dance 290. May be repeated for credit.

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 (1 to 4). Limited to Teaching Assistants. Prerequisite: consent of instructor. May be repeated for credit.

Department of Drama

246 Fine Arts Administration; (714) 856-6614

Stephen Barker, **Department Chair**

Faculty

Keith Bangs, M.F.A. Yale University, *Lecturer in Drama* (technical production)

Stephen Barker, Ph.D. University of Arizona, *Department Chair and Associate Professor of Drama and Chair of Fine Arts General Interdisciplinary Studies*

Dennis Castellano, M.F.A. University of California, Irvine, *Lecturer in Drama* (music theatre)

Robert Cohen, D.F.A. Yale University, *Professor of Drama* (acting, directing, dramatic literature)

Kate Davy, Ph.D. New York University, *Associate Dean of the School of Fine Arts and Associate Professor of Drama and Women's Studies* (feminist criticism and theory, American experimental theatre, and performance art)

Keith Fowler, D.F.A. Yale University, *Associate Professor of Drama and Head of Directing* (acting and dramatic literature)

Clayton Garrison, Ph.D. Stanford University, *Professor of Drama* (opera and musical theatre, movement, dramatic literature)

Douglas S. Goheen, Ph.D. University of Denver; M.F.A. Yale University, *Associate Professor in Drama* (scenery, costume design, and history of design)

Jerzy Grotowski, Polish Laboratory Theatre, *Lecturer in Drama* (objective drama)

Julie Haber, M.F.A. Yale University, *Lecturer in Drama* (stage management)

Cameron Harvey, M.F.A. University of California, Irvine, *Professor of Drama and Head of Theatre Design* (lighting design, production)

Eric Kline, M.A. San Francisco State University, *Lecturer in Drama* (television acting)

Dudley Knight, M.F.A. Yale University, *Lecturer in Drama and Head of Acting* (voice, speech for actors, acting)

David McDonald, Ph.D. Stanford University, M.F.A. Yale University, *Associate Professor of Drama* (critical theory, dramatic literature, and playwrighting)

Martha McFarland, B.A. San Francisco State University, *Lecturer in Drama* (auditions)

Elizabeth Novak, M.F.A. University of California, Riverside, *Assistant Professor of Drama* (costume design)

Thomas Ruzika, M.F.A. University of California, Irvine, *Lecturer in Drama* (lighting design, production management)

Mahlon Schanzenbach, M.A. California State University, Long Beach, *Lecturer in Drama* (voice)

Eli Simon, M.F.A. Brandeis University, *Assistant Professor of Drama* (acting, directing)

Kiyoaki Terajima, Kuroemon, *Lecturer in Drama* (Kabuki and modern Japanese theatre)

Philip Thompson, M.F.A. University of California, Irvine, *Lecturer in Drama* (acting)

Richard Triplett, Otis Art Institute, *Professor of Drama* (scenery and costume design, history of design)

The program leading to the Bachelor of Arts in Drama combines broad liberal study and comprehensive preprofessional training. Each Drama major studies and practices in each of several mutually related areas of the theatre: performance, literature, history, criticism, and design and production with particular emphasis upon performance. The curriculum is structured to relate studio

practices, technical resources, and production techniques to the development of dramatic literature and current critical theory.

The program is designed for students preparing to work professionally in the theatre, often after more specialized training at the graduate level, as well as for students who, while not planning to make the theatre their vocation, have a serious interest in the literature, theory, and practice of drama.

Careers for the Drama Major

A degree in Drama may or may not lead to professional employment in theatre or films. A professional career demands, in addition to excellent training, great talent, great dedication, and not a little bit of luck—intangibles no drama program can promise or even imply.

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 earning the Master of Fine Arts degree at UCI or elsewhere.

Requirements for the Bachelor's Degree

University Requirements: See pages 50–53.

School Requirements: None.

Departmental Requirements for the Major

One year survey in the development of dramatic literature (Drama 40A-B-C); one year in acting (Drama 30A-B-C); three courses in design (Drama 50A-B-C); an introductory course in production theory (Drama 10); two upper-division courses in dramatic literature; six upper-division courses in addition to the two in dramatic literature mentioned above (these may be in studio work and/or dramatic literature, playwriting, and criticism); two quarters in dance (these courses may be taken Pass/Not Pass); eight units of theatre production (Drama 101) of which four units must be completed during the first year of residence at UCI.

It is strongly recommended that students take Drama 40A-B-C in their sophomore year, after completion of the lower-division writing requirement.

Sample Program for Freshmen

Fall	Winter	Spring
Drama 30A	Drama 30B	Drama 30C
Drama 50	Drama 50	Drama 50
Drama 101 (2 units)	Drama 101 (2 units)	English and Comparative Literature WR39C
English and Comparative Literature WR39A	English and Comparative Literature WR39B	Elective
Elective	Elective	

Departmental Requirements for the Minor

Drama 10 (Introduction to Production Theory); Drama 30A-B-C (Acting); Drama 40A-B-C (Development of Drama); four upper-division courses in drama, each of which must be taken at UCI, including one course in Drama 101 (Theatre Production).

Honors in Acting Program

Admission to the Honors in Acting Program requires both eligibility and a special audition. The eligibility requirements are: (1) at least one year in good standing as a UCI Drama major; (2) completion of Drama 130A-B and at least one section of either Drama 135 or Drama 165, all at UCI, with a combined grade

point average in all acting courses of 3.2 or higher; (3) performance in at least three official Drama at UCI productions (including mainstage, stage 2, stage 3, workshop, or cabaret); (4) completion of all Drama 101 (Theatre Production) assignments; and (5) completion of the 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 during Welcome Week, 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 (URTA) auditions; (3) eligibility, on a space available basis, for South Coast Repertory Theatre internships, currently available only to M.F.A. students; (4) eligibility to audition at UCI-screened Shakespearean Festivals; and (5) eligibility to audition for the Santley Showcase Productions.

The Santley Showcase is a UCI-sponsored professional showcase production presented annually in New York and Los Angeles for casting directors, agents, directors, and producers. All travel and production funds are provided from the Santley bequest. Honors in Acting status does not guarantee final selection for the Santley Showcase, but only Honors in Acting students, third-year M.F.A. students, and alumni are eligible to audition for this presentation.

Master of Fine Arts Program

Degree Offered

M.F.A. in Drama, with emphasis in acting, directing, design and production, or music theatre.

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 or music theatre. UCI coordinates its auditions with the University/Resident Theatre Association (URTA), and conducts auditions, both for U/RTA finalists and UCI applicants, in New York, Chicago, Long Beach, and in Irvine during February. Interviews for applicants in directing and design and production 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.

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.

In addition, acting and music theatre students must take one Drama mainstage or two Stage 2 production running-crew assignment(s) in their first year of residence.

One hundred eight 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, objective drama, or music theatre (Drama 219, 289, 216, or 135)

One seminar in script analysis and research (Drama 235)

Two courses in history of theatre (Drama 205A-B)

Two seminars in dramatic literature, performance theory, criticism, history of theatre, or contemporary theatre (Drama 220-223, 225, or 230)

Six graduate projects, of which two may be professional internships (Drama 240 or 295)

Design and Production

Nine graduate studios in design/production, one of which is the thesis (Drama 255)

Seven courses in graduate projects (Drama 240)

Three courses in production theory (Drama 150-159)

Two courses in history of theatre (Drama 205A-B)

Two courses in history of design and production (Drama 120 A-B)

One course in directing (Drama 170)

One course in production management (Drama 171)

One seminar in script analysis and research (Drama 235)

One seminar in dramatic literature, performance theory, criticism, theatre history, contemporary theatre, or conceptualization and collaboration (Drama 220-223, 230, or 245)

Directing

Nine graduate studios in directing (Drama 211)

Two courses in history of theatre (Drama 205A-B)

Three courses in acting (Drama 210, 130A-B, or 135 as qualified)

One seminar in script analysis and research (Drama 235)

Three seminars in dramatic literature, performance theory, criticism, theatre history, contemporary theatre, or conceptualization and collaboration (Drama 220-223, 230, or 245)

One course in production management (Drama 171)—must be taken the first quarter in residence

Seven projects, of which one is the thesis, one is a project in stage management or theatre production, and one may be a professional internship (Drama 240, 295)

One elective

Music Theatre

Nine courses in graduate music theatre (Drama 216)

Three courses in graduate projects, of which one is the thesis (Drama 240)

Three courses in acting (Drama 210, 130A-B, or 135 as qualified)

One seminar in dramatic literature, performance theory, criticism, or history of the theatre (Drama 220-223)

Nine courses in graduate voice tutorial (Music 218)

Two courses in history of music theatre and opera (Drama 148A-B)

Nine courses in upper-division dance

Courses in Drama

Lower-Division

10 Introduction to Production Theory (4) F, W, S. 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.

20 The Nature of Drama: Structure and Style (4). A general introduction to the dramatic literature of several periods, with an emphasis on dramatic form and meaning.

25 Shakespeare (4) F, W, S. A reading of selected plays by Shakespeare, with a focus on thematic and theatrical aspects of Shakespeare's art.

30A-B-C Acting (4-4-4), (30A) F, Summer, (30B) W, (30C) S. 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.

32 Beginning Playwriting (4). Writing of assigned exercises and the completion of the equivalent of a one-act play. Analysis of alternative forms: Absurdist, Brechtian, Naturalistic, and Symbolic, as well as the more traditional forms of comedy, tragedy, and melodrama. Same as English and Comparative Literature WR32.

34 Movement for Actors (4-4-4) F, W, S. 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.

35 Speech for the Theatre (4) F, W, S. 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 Fine Arts majors. May be repeated for credit.

40A-B-C Development of Drama (4-4-4) F, W, S. 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 15 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. This quarter concentrates on the Post Naturalistic theatre: Expressionism, Epic Theatre, Theatre of the Absurd, and Contemporary American Theatre. Among the playwrights studied are Shaw, Pirandello, Giraudoux, Ionesco, Beckett, Williams, Brecht, Weiss, and Albee. Same as English and Comparative Literature CL 40A-B-C. (IV)

50A Introduction to Costume Design (4) F, W, S. 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) F, W, S. 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) F, W, S. 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.

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 construction of designed work as well as its applied execution during performance. Prerequisite: consent of instructor. May be taken for credit 12 times provided productions change. Pass/Not Pass Only.

101A Theatre Production: Costume (2-4) F, W, S

101B Theatre Production: Scenic (2-4) F, W, S

101C Theatre Production: Lighting (2-4) F, W, S

101D Theatre Production: Stage Management (2-4) F, W, S

101E Theatre Production: Audio (2-4) F, W, S

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. May be repeated, provided topic changes.

104 Greek Drama (4). A concentrated examination of the major works of Aeschylus, Sophocles, Euripides, and Aristophanes, with additional readings in Greek dramatic theory and theatre history.

117 Russian Stage and Film Drama (4). Development of the Russian theatre through the Symbolist drama to Futurism and the post-Revolutionary era. The innovation of twentieth-century stage directors, and masterpieces of the Soviet. Open to freshmen. Lectures, readings, and discussions in English.

120A-B History of Design and Production (4-4). The history of theatrical design and production. Scenery, costumings, stage lighting and machinery, and theatre architecture receive special attention, as do production methods and techniques.

130A-B Advanced Acting (4-4). **130A:** Rehearsal and presentation of at least five scenes from contemporary material. Exercises in developing relationship communication and character-to-character contact. May be repeated for credit. **130B:** Rehearsal and performance of four scenes developing characters in depth; examination of the credibility and theatricality of characterization and style. Prerequisite for 130A: Drama 30A-B-C. Prerequisite for 130B: Drama 130A. May be repeated for credit.

132 Advanced Playwriting (4). Completion of a full-length play or its equivalent; discussion of student writing and of relevant literary texts. Same as English and Comparative Literature 112. Prerequisites: Drama 32 and consent of instructor. May be repeated for credit.

133A-B Stage Combat (2-2) F, W. **133A:** Stage combat including unarmed combat, knife-fighting, and sword-fighting. **133B:** Rapier and dagger. Basic techniques, attacks, parries, footwork, cloakwork; staff fighting Eastern and Western. Prerequisites: Drama 130A-B. May be repeated for credit.

135 Master Classes in Acting (1 to 4). Acting in specialized areas including television acting, improvisation, movement for the actor, body language, Shakespeare, Molière restoration, theories, Kabuki, and modern Japanese theatre. Prerequisites: Drama 130A-B. May be repeated for credit.

140 Contemporary American Theatre (4). A close examination of works and trends in the American theatre since World War II, including

current playwriting as represented by new plays produced in Los Angeles, New York, Chicago, and other major repertory theatre centers.

141 Contemporary British Theatre (4). A close examination of British theatre in the post-Suez (1956-on) period, with special attention to political trends in current British playwriting.

142 Contemporary Continental Drama (4). A close examination of continental European dramatic literature and theory. Readings from Camus, Sartre, Beckett, Ionesco, Genet, Mrozek, Handke, Brecht, and others.

148A-B History of Music Theatre (4-4) F, W. A survey of the principal forces and styles at work in the American musical theatre.

150 Costume Production Techniques (4). Studio instruction in pattern making, draping, millinery, and construction techniques. Prerequisite: Drama 50A. May be repeated for credit.

151 Scenery Production Techniques (4). Theatre architecture, the physical stage and its equipment, the principles of scenery construction, and the nature and sources of scenic materials are among the lecture topics. Theatre engineering is studied as a drawing subject. Particular emphasis is given to the maintenance of design integrity in scenic execution. Prerequisite: Drama 50B.

152 Lighting Production Techniques (4). An exploration of the methods and resources used by the lighting designer in the theatre. Class tours are conducted to leading theatres and commercial suppliers to examine equipment and procedures first hand. Detailed studio attention is given to the development of stage lighting graphics and problems related to road troupings. Prerequisite: Drama 50C.

153 Makeup Production Techniques (4). A studio laboratory course in the techniques of stage makeup including projects in prosthetics and ventilation of hair. Prerequisite: consent of instructor.

154 Audio Production Techniques (4). A studio-lecture course in the basic theories and techniques of using audio reproduction and reinforcement as an integral part of a theatrical production.

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.

156 Scene Painting (4). A studio course in scenery painting. Full-scale projects in the techniques of the scenic artist will be practiced in the scenery studio. Prerequisite: Drama 50B or consent of instructor.

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.

165 Music Theatre Workshop (4). A workshop in movement, vocal performance, and acting in the musical theatre. Exercises, preparation for auditions, scenes. May be taken for credit six times.

170 Directing (4) F. 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. May be repeated for credit.

171 Production Management (4) F. 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.

172 Contemporary Theories on Play Directing (4).

173A Theatre Orchestra (2).

175 Staging Shakespeare (4) W. 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. Prerequisites: Drama 170 and consent of instructor. May be repeated for credit.

180 Contemporary Dramatic Criticism and Theory (4). Reading and analysis of theories and critical approaches to contemporary theatre: Stanislavski, Brecht, Artaud, and others who have contributed to the form and idea of the modern theatre. Writing of assigned exercises in dramatic criticism. May be repeated for credit.

182 History of Dramatic Criticism (4). Reading and analysis of the principal theorists and critics of dramatic art, including Aristotle, Corneille, Diderot, Dryden, Lessing, Coleridge, Zola, and Nietzsche, among others.

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. Prerequisites: Drama 170 and consent of instructor. May be repeated for credit.

186 Directed Scenes (4). Rehearsal and performance of a series of scenes directed by graduate directing students. Prerequisites: Drama 130A and consent of instructor. May be taken for credit six times as scenes change.

187 Cabaret Performance (1). Rehearsal and public performance of cabaret material. Prerequisites: audition and consent of instructor. May be taken for credit six times as performance changes.

188 Showcase Performance (4). Rehearsal and public performance in departmentally sponsored acting showcase in New York and Los Angeles. Prerequisites: Drama 130A and 135; senior standing; audition and consent of instructor.

189 Objective Drama (1 to 8) F, W, S. A practical study of ancient aspects of performance from various cultures. May be repeated for credit.

190 Studio in Acting (4). May be repeated for credit.

191 Studio in Directing (4). May be repeated for credit.

194 Criticism (4). May be repeated for credit.

197 Dramatic Literature (4). May be repeated for credit.

198 Drama Workshop (4) F, W, S. 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) F, W, S. Prerequisite: consent of instructor. May be repeated for credit.

Graduate

NOTE: All graduate courses in Drama may be repeated for credit.

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).

201 Graduate Studio: Voice (1) F, W, S. Graduate studio in vocal production for actors.

202 Graduate Studio: Speech (1). Graduate studio in speech for actors.

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).

204A-B Graduate Studio: Combat (2) W, S. **204A:** Stage combat including unarmed combat, knife-fighting, and sword-fighting. **204B:** Rapier and dagger. Basic techniques, attacks, parries, footwork, cloak-work; staff fighting—Eastern and Western.

205A-B History of Theatre (4-4). The history of the stage, including the development of acting, directing, design, dramatic literature, and dramatic criticism. **205A:** To 1642. **205B:** After 1642.

206 Graduate Studio: Voice/Movement Dynamics (2) F, W, S. Daily conditioning exercises.

211 Graduate Studio: Directing (4) F, W, S

212 Graduate Studio: Playwriting (4)

216 Graduate Music Theatre (4) F, W, S. A workshop in vocal performance, audition technique, and acting for the musical theatre. Exercises, scenes, and projects. May be taken for credit six times with consent of instructor.

217 Opera Workshop (4) F. Participation in staged performances of scenes from operas. Designed to broaden the repertoire of singers by offering them opportunities to become acquainted with a variety of operatic roles. May be taken for credit three times with consent of instructor.

218 Graduate Drama: Objective Drama (1 to 8). A practical study of the prehistory of performance, including traditional rituals from various world cultures.

219 Graduate Master Class (1 to 4) F, W, S. Various topics such as Shakespeare, comedy, Molière, improvisation, Kabuki, television acting.

220 Seminar in Dramatic Literature (4) F, W, S

221 Seminar in Criticism (4)

222 Seminar in Theatre History (4)

223 Seminar in Performance Theory (4). A study of major performance theories since Diderot's *Paradox of Acting*.

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.

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.

240 Graduate Projects (1 to 4) F, W, S, Summer. Various projects depending on student's concentration (acting, design, musical theatre, directing).

245 Conceptualization and Collaboration (4) S. A study of the potential for directorial conceptualization and collaboration with designers in the areas of scenery, costume, lighting, and sound.

250 Directed Reading (4)

255 Graduate Design and Production (4) F, W, S. Studio exercises and projects in costume, scenery, lighting design, and stage management. Open only to Drama graduate students pursuing the Design and Production emphasis.

256 Designers' Presentational Techniques (4) F. A studio course in rendering techniques employed by costume and scenic designers for the stage. Projects will include graphic development for costume plates, atmospheric rendering, painters' elevations, and model building.

287 Cabaret Performance (1). Rehearsal and public performance of cabaret material. Prerequisites: audition and consent of instructor. May be taken for credit six times as performance changes.

289 Objective Drama (1 to 8) F, W, S. A practical study of ancient aspects of performance from various cultures. Satisfactory/Unsatisfactory Only.

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 in acting and directing. A stipend and equity points are provided by the theatre company.

399 University Teaching (4) F, W, S. Limited to Teaching Assistants.



Drama majors study and practice in each of several related areas of the theatre: performance, literature, history, criticism, and design and production, with emphasis upon performance.

Department of Music

292 Music Building; (714) 856-6615

Bernard Gilmore, **Department Chair**

Faculty

Bruce Bales, M.F.A. University of California, Irvine *Lecturer in Music* (choral ensembles, voice)
 Andree Baumlér, M.A. The Juilliard School, *Lecturer in Music* (contrabass)
 Haroutune Bedelian, Associate of the Royal Academy of Music, London, *Lecturer in Music* (violin, chamber ensembles)
 Zelman Bokser, D.M.A. Eastman School of Music, *Assistant Professor of Music, Director of Instrumental Music, and Conductor of the UCI Symphony* (conducting, theory, composition)
 Rae Linda Brown, Ph.D. Yale University, *Assistant Professor of Music* (history, American musics)
 Rose Corrigan, B.A. University of Southern California, *Lecturer in Music* (bassoon)
 Lucerne DeSa, M.M. University of Southern California, *Lecturer in Music* (piano)
 Russell Dicey, B.F.A. California Institute of the Arts, *Lecturer in Music* (French horn)
 Theresa Dimond, M.M. University of Southern California, *Lecturer in Music* (percussion)
 Stephen Erdody, M.Mus. The Juilliard School, *Lecturer in Music* (violin-cello)
 Kathleen Robinson Fraider, B.Mus. University of Southern California, *Lecturer in Music* (oboe)
 Bernard Gilmore, D.M.A. Stanford University, *Department Chair and Associate Professor of Music* (composition, conducting, theory)
 Patrick Goesser, M.A. University of Iowa, *Lecturer in Music* (vocal performance, voice, opera)
 Kathleen Grant, D.M.A. University of Southern California, *Lecturer in Music* (choral ensembles)
 Frederick Greene, M.Mus. Ed. University of Southern California, *Lecturer in Music* (tuba)
 Janna Hall, M.Mus. DePaul University, *Lecturer in Music* (clarinet)
 Robert Hickok, B.Mus. Yale University, *Dean of the School of Fine Arts and Professor of Music* (conducting)
 Nina Hinson, M.M. University of Southern California, *Lecturer in Music* (voice, opera)
 William C. Holmes, Ph.D. Columbia University, *Professor of Music* (history, opera)
 Joseph B. Huszti, M.Mus. Northwestern University, *Professor of Music and Director, Voice and Choral Music* (conducting, choral ensembles, voice)
 Rosemary Hyler, B.Mus. Catholic University of America, *Lecturer in Music* (accompanying, piano, vocal coaching)
 Larry Kaplan, Performance Certificate, Académie Internationale, *Lecturer in Music* (flute)
 Laura Kuennen, M.M. Eastman School of Music, *Lecturer in Music* (viola)
 Alfred Lang, M.F.A. University of California, Irvine, *Lecturer in Music* (trumpet, jazz ensemble, wind ensemble)
 Claudia Barritt Levine, B.Mus. The Juilliard School, *Lecturer in Music* (string bass)
 Karen McBride, B.A. Occidental College, B.Mus. California State University, Fullerton, *Lecturer in Music* (voice)
 Eric Moline, B.M. University of Southern California, *Lecturer in Music* (trombone)
 Margaret Murata, Ph.D. University of Chicago, *Professor of Music* (history, theory)
 Peter S. Odegard, Ph.D. University of California, Berkeley, *Professor of Music* (theory, composition)
 Adelle J. Palmer, M.M. University of Michigan, *Lecturer in Music* (opera workshop)
 Beverly Patton, M.A. California State University, Chico, *Lecturer in Music* (voice)
 Ronald W. Sainio, M.Mus. University of Wisconsin, *Lecturer in Music* (basic voice, choral ensembles)
 Mahlon Schanzenbach, M.A. California State University, Long Beach, *Lecturer in Music* (voice)

John Schneiderman, B.Mus. University of California, Irvine, *Lecturer in Music* (lute, guitar)
 Nina Scolnik, B.Mus. Oberlin Conservatory, Performance Diploma, The Juilliard School, *Lecturer in Music* (piano, chamber music)
 David Shostac, M.A. The Juilliard School, *Lecturer in Music* (flute)
 H. Colin Slim, Ph.D. Harvard University, *Professor of Music* (history)
 Joanne Turovsky, M.Mus. University of Southern California, *Lecturer in Music* (harp)
 Michael Vaccaro, *Lecturer in Music* (saxophone)
 Willem F. Van Overeem, M.A. University of California, Berkeley, *Lecturer in Music* (piano)
 Allan Vogel, D.M.A. Yale University, *Lecturer in Music* (oboe)
 Lin White, American Academy of Dramatic Arts, *Lecturer in Music* (opera, staging)
 Marianne Whitmyer, B.A. University of California, Irvine, *Lecturer in Music* (flute)
 Phillip D. Young, D.M.A. University of Southern California, *Lecturer in Music* (vocal performance)

Additional professional staff in instrumental music supplement the faculty in accordance with the needs of the program.

Programs of Study

The Department of Music offers two undergraduate degrees (the Bachelor of Arts in Music and the Bachelor of Music), an undergraduate minor in Music, and the Master of Fine Arts degree in Fine Arts.

The Bachelor of Music (B.Mus.) degree program is performance-oriented. It offers students the opportunity to specialize in one of the following: bassoon, clarinet, contrabass, flute, French horn, harp, lute and guitar, oboe, percussion, piano, saxophone, trombone, trumpet, tuba, viola, violin, violoncello, voice. (The specialization appears on the student's UCI transcript.) In addition, B.Mus. students may qualify for the Special String Performance option, an intensified curriculum for professional-level students. All B.Mus. students receive continuous private instruction and present a solo recital during their senior year. B.Mus. students participate in performance classes each quarter. Vocal performance students focus on diction, movement, stage presentation, repertory, criticism, and style. Guitar and lute students focus on ensemble work, repertory with other instruments and voice, criticism, and pedagogy. Piano students give weekly solo performances before other students, and also focus on criticism, style, and interpretation. String, wind, brass, percussion, and also piano students focus on quartet work, small ensembles, and solo sonatas privately coached and presented in afternoon recitals.

The Bachelor of Arts (B.A.) degree program enables students to pursue elective subjects in music (such as composition or conducting), in the fine arts, or in other academic disciplines.

Several music scholarships are offered to promising undergraduate performers. Application for a scholarship audition (usually held in November, January, and May) should be made at the departmental office as soon as possible after the student has applied to the University; telephone (714) 856-6615.

The University's Education Abroad Program offers students the opportunity to study abroad their junior year. Music majors may enroll in conservatories and universities in several countries; highly qualified performers may be eligible to attend the Conservatorio G. B. Martini in Bologna, Italy. See the Educational Abroad Program section for additional information.

In each baccalaureate degree program, students receive private lessons on their instruments, or in voice, and perform in orchestral or choral concerts, in chamber ensembles, and in solo recitals; however, such participation varies according to which degree the student elects to pursue.

A five-year program coordinated with the UCI Office of Teacher Education is available for students interested in obtaining a California Teaching Credential.

The Master of Fine Arts (M.F.A.) degree program in Fine Arts emphasizes composition, choral conducting, voice, piano performance, and instrumental performance.

Performance Opportunities

The Department offers a variety of choral ensembles that give every student, regardless of major, the opportunity to sing. Some groups participate in international concert tours. The California Chamber Singers, Concert Choir, Madrigal Singers, Women's Chorus, Men's Chorus, University Singers, and Jazz Singers make up the permanent ensembles. Additional performances are presented in conjunction with professional orchestras, invitational festivals, and Southern California concert venues. In December, the Department also produces the annual series of Madrigal Dinners that celebrate the Christmas season at the court of Henry VIII.

The UCI Symphony Orchestra offers participants an opportunity to explore the great masterworks of the standard orchestral repertoire. The orchestra performs a number of programs each year and each performance features a guest artist. Artists have included Lincoln Mayorga, piano; Margaret Batjer, violin; Stephen Erdody, violoncello; and the UCI Choral Union in Mendelssohn's *Elija*. Mozart's *Magic Flute* was presented in conjunction with the Departments of Drama and Dance.

Careers in Music

A degree in Music offers many career opportunities. Music is a highly competitive profession and a degree may or may not lead to professional employment with an orchestra or as a concert artist. Many graduates do, however, become successful freelance members of symphony orchestras, composers, and performers. Many others go on to pursue graduate degrees in performance, music history, conducting, arts management, music librarianship, composition, or secondary or postsecondary education. Some graduates have made careers in music publishing and in the recording industry.

Recommended Proficiency Levels for Entering Freshmen

All entering majors are expected to have competence in reading and performance music and must audition for placement in the program.

Freshmen students wishing to enter either of the baccalaureate degree programs in Music should have had a minimum of two years of instrumental or vocal instruction and should know scales, fundamental notation, and triads. In addition, they should have the ability to read music in both treble and bass clefs. Basic keyboard skill is highly desirable, as is experience as a solo performer. Choral, orchestral, band, or stage experience is desirable.

Freshmen students who wish to pursue the B.Mus. degree should have, in addition to the above, at least three years (instead of two years) of private instruction; knowledge of scales, chords, and arpeggios; sight-reading ability; and a solo repertoire from the sonata or chamber literature or the art song and oratorio literature.

Transfer students pursuing either undergraduate degree should have had college-level private instrumental or vocal instruction; two years of music theory; the history of western music; ear-training; sight-singing; sight-reading; and piano. *All transfer students must pass a performance audition in order to enter either baccalaureate degree program.*

For transfer students pursuing the B.Mus. degree, results of the audition will determine the minimum number of quarters necessary to complete degree requirements. All transfer students also must take placement tests in musicianship, theory, and history in order to transfer these courses in fulfillment of the UCI Music degree requirements. These placement exams are given just before the beginning of the student's first quarter of study at UCI.

It is strongly recommended that all entering B.Mus. students have at least the following experience and/or abilities in music:

Voice students—at least two years of private study and/or participation in choral or instrumental ensemble; some facility at the keyboard; a background in Italian, French, and German art songs.

Piano students—ability to perform a Haydn or Mozart sonata, a two-part invention of Bach, and all major and minor scales and arpeggios.

Woodwind and brass students—ability to sustain tone production; accurate intonation over a dynamic range (from *pianissimo* to *fortissimo*); control of breath and articulation; all major and minor scales and arpeggios (*legato* and *staccato*) commensurate with the range and technique of the particular instrument; ability to play and read repertoire of a difficulty comparable to the symphonies of Haydn, Mozart, Beethoven, and Schubert; and demonstrable knowledge of the sonata literature for the particular instrument.

Percussion students—mastery of rudimentary drum techniques; some knowledge of piano.

String students—ability to produce a clear tone and precise intonation with and without vibrato; controlled vibrato; slurred, *detaché*, *louré*, *staccato*, and simple *spiccato* bow strokes; knowledge of all major and minor scales and arpeggios; ability to play and read repertoire of a difficulty comparable to the symphonies of Haydn, Mozart, Beethoven, and Schubert as well as demonstrable knowledge of the sonata literature for the particular instrument.

Special String Performance students—**Violin**: major and minor scales and arpeggios through three octaves, one movement from a Bach unaccompanied sonata or partita, one movement from a Classical or Romantic sonata, two contrasting movements of a Classical or Romantic concerto from the standard repertoire; **Viola**: major and minor scales and arpeggios through three octaves, one movement from a Bach suite, one movement of a sonata or concerto from the standard repertoire (e.g., Brahms sonata, or concertos by Handel, Hoffmeister, Bartók, or Teleman); **Violoncello**: major and minor scales and arpeggios through three octaves, one movement from a Classical sonata (e.g., Sammartini G major sonata, Beethoven sonata) or two contrasting movements from a Bach suite, one movement from a Romantic sonata (e.g., Brahms, Strauss) or one movement from a concerto from the standard repertoire (e.g., Lalo, Saint-Saëns, Dvůrák, Haydn); **Double Bass**: major and minor scales and arpeggios, a solo from Saint-Saëns' *Carnival of the Animals* or comparable work, two contra string movements from any concerto of the standard repertoire.

Guitar and lute students—ability to perform a Renaissance fantasy and dance (e.g., Dowland, Holborne), a baroque prelude and dance (e.g., Bach, Weiss), a classical etude, sonata, or theme and variations (e.g., Sor, Giuliani), and a twentieth-century etude (e.g., Villa-Lobos, Brouwer). Ability to sight-read single lines on all parts of the fingerboard and multivoice pieces up to the fifth position. Prior knowledge of the lute is desirable but not required. Guitarists with a nonclassical background (fingerstyle, jazz, rock) will be considered if they have adequate facility on the instrument and the desire to explore the classical guitar and lute repertoire.

Sample Program — B.A.

	Freshman	Sophomore	Junior	Senior
Fall	Music 5A Music 30A Elective (Music 10) Elective (Ensemble) English and Comparative Literature WR39A	Music 15A Music 35A Breadth II Elective	Music 40A Instrument Ensemble Breadth III	Music 155A Ensemble Breadth V Breadth VII
Winter	Music 5B Music 30B Elective (Music 10) Elective (Ensemble) English and Comparative Literature WR39B	Music 15B Music 35B Breadth II Instrument Ensemble	Music 40B Breadth III Instrument Ensemble Breadth VII	Music 155B Breadth V Ensemble Elective
Spring	Music 5C Music 30C Elective (Music 10) Instrument or Voice Ensemble English and Comparative Literature WR39C	Music 15C Music 43 or 78 Instrument Ensemble Breadth II	Music 40C Instrument Ensemble Elective Breadth III	Music 145 Ensemble Breadth V Elective

Sample Program — B.Mus.

	Freshman	Sophomore	Junior	Senior
Fall	Music 5A Music 30A Elective (Music 10) Major group ¹ English and Comparative Literature WR39A	Music 15A Music 35A Music 40A Major group ¹	Breadth II Breadth III Major group ¹	Music 155A Breadth V Major group ¹ Breadth VII
Winter	Music 5B Music 30B Elective (Music 10) Major group ¹ English and Comparative Literature WR39B	Music 15B Music 35B Music 40B Major group ¹	Music 192J Breadth II Breadth III Breadth VII Major group ¹	Music 155B Breadth V Major group ¹
Spring	Music 5C Music 30C Elective (Music 10) Major group ¹ English and Comparative Literature WR39C	Music 15C Music 40C Music 43 or 78 Major group ¹	Music 145 Breadth II Breadth III Major group ¹	Music 192S Breadth V Elective Major group ¹

¹ Three courses taken concurrently that are determined by the student's major. See Course Groups by Major chart below.

Course Groups by Major

	Piano major	Voice major	Guitar/Lute major
Private Lesson	Music 165	Music 168	Music 190
Solo Performance Class	Music 175	Music 63, 163	Music 174
Ensemble	Music 176	Music 162	Music 176
	String major	Woodwind/Brass major	Percussion major
Private Lesson	Music 166	Music 167	Music 190
Solo Performance Class	Music 176 or 194	Music 176	Music 176
Ensemble	Music 160	Music 160, 161, or 178	Music 160, 161, or 178

Requirements for the Bachelor's Degree

University Requirements: See pages 50–53.

School Requirements: None.

Departmental Requirements—Core

Five quarters of theory (Music 30A-B-C and 35A-B); two years of musicianship (Music 5A-B-C and 15A-B-C); one year of music history (Music 40A-B-C); one quarter of tonal counterpoint (Music 43) or one quarter of history of jazz (Music 78); attainment of a passing score on the Basic (sight-reading) Piano Examination, to be taken no later than the first quarter of the junior year.

Bachelor of Arts Degree: Satisfactory completion of the Core requirements; two quarters of analysis (Music 155A-B); one quarter of twentieth-century music (Music 145); two years of instrumental or vocal instruction (12 units maximum, selected from Music 65–68, 165–168, or 190; two years of ensemble or repertory classes as assigned by the Department (12 units selected from Music 63, 160–164, 169, 171, 172, 174, 175, 176, 178, or 194). Transfer students must complete at least six units of instrumental or vocal instruction in residence and six units in ensemble or repertory courses in residence.

Bachelor of Music Degree: Satisfactory completion of the Core requirements; two quarters of analysis (Music 155A-B); one quarter of twentieth-century music (Music 145); instrumental or

Sample Program — Special String Performance B.Mus.

	Freshman	Sophomore	Junior	Senior
Fall	Music 5A	Music 15A	Music 40A	Music 194
	Music 30A	Music 35A	Music 194	Music 177
	Elective (Music 10)	Music 77	Music 177	Music 160
	Music 77	Music 160	Music 160	Breadth V
	Music 160	Fine Arts course	Breadth III	Breadth VII
	English and Comparative Literature WR39A	Breadth II		
Winter	Music 5B	Music 15B	Music 40B	Music 194
	Music 30B	Music 35B	Music 194	Music 177
	Elective (Music 10)	Music 77	Music 177	Music 160
	Music 77	Music 160	Music 160	English and Comparative Literature WR139
	Music 160	Fine Arts course	Music 192J	Breadth V
	English and Comparative Literature WR39B	Breadth II	Breadth III	
Spring	Music 5C	Music 15C	Music 40C	Music 194
	Music 30C	Music 43 or 78	Music 194	Music 177
	Elective (Music 10)	Music 77	Music 177	Music 160
	Music 77	Music 160	Music 160	Music 196
	Music 160	Breadth VII	Music Elective	Breadth V
	English and Comparative Literature WR39C	Breadth II	Breadth III	

vocal instruction each quarter of residence (Music 165–168 or 190); senior recital (Music 192S); completion of the following courses each quarter of residence and according to the specialization selected: *orchestral or band instruments*— orchestra, wind ensemble, or jazz band, as assigned by the Department (Music 160, 161, or 178) and chamber ensembles (Music 176); *guitar and lute*— guitar and lute workshop (Music 174) and chamber ensembles (Music 176); *piano*—piano repertory (Music 175) and chamber ensembles (Music 176); *voice*—chorus (Music 162) and vocal performance (Music 63 or 163). With permission of the director of the program in voice, a student when in residence may substitute two quarters of acting (Drama 30A-B) and two quarters of music theatre workshop (Drama 165) for a maximum of four quarters of vocal performance (Music 63 or 163). During the quarter of their senior recital, students, by permission of the Music faculty, may be exempted from their ensemble requirement.

Bachelor of Music Degree (Special String Performance):

Satisfactory completion of the Core requirements; four years of instruction in the major instrument (Music 77 and 177); four years of orchestra (Music 160); two years of chamber music (Music 194); any three courses in history or criticism of art, dance history, development of drama, dramatic literature, or film criticism; four to eight units of a music elective selected from Music 145, 135A, 135B, 140–144, 155A-B; senior recital (Music 196).

Program Requirements for the Minor

One year of history of music (Music 4A-B-C or 40A-B-C); one year of theory (Music 30A-B-C); eight units of studio tutorials (private lessons) selected from Music 65-68, 165–168, or 190; 10 units in performance ensembles selected from Music 160–162 or 178.

Residence Requirement for the Minor: A minimum of four upper-division courses for the minor must be taken at UCI.

Master of Fine Arts Program**Degree Offered**

M.F.A. in Fine Arts, with emphasis in composition, choral conducting, voice, piano performance, and instrumental performance.

Admission

Applications for admission to the degree program are normally submitted by March 1 for the following fall quarter. Applicants

for admission to the degree program must meet the general requirements for admission to graduate study and hold a B.A. in Music, or B.Mus., or the equivalent. Applicants should have completed at least two years of college study, or the equivalent, of one of the following languages: French, German, Italian, or Latin.

Applicants must also submit an 8 to 10 page paper on a musical subject (analytical, theoretical, historical); this requirement may be fulfilled by the submission of an undergraduate term paper.

All applicants for programs in performance must audition for members of the music faculty. In special cases, a recently recorded demonstration of performance may be accepted. Applicants for the program in composition must submit scores and tapes of their works.

All students accepted for admission must demonstrate competence in basic musical skills: sight-singing, written and keyboard harmony dictation, and minimal facility at the keyboard (including sight-reading). Normally these skills are tested the week before fall quarter begins. Students who do not pass the tests upon matriculation must do so before enrolling for any second-year courses.

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. Reading knowledge of one language other than English (French, German, Italian, Latin) must be demonstrated by written examination administered through the Department of Music. This examination must be scheduled no later than the third quarter of residency and must be passed before the candidate may schedule the comprehensive examination.

Comprehensive examinations are normally taken after three to four quarters in residence as a prerequisite to candidacy for the M.F.A. degree. A student failing these examinations may reschedule them once in the following quarter. Participation in performance at UCI as assigned by the Department throughout residence is required.

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. Not more than 20 units in upper-division

courses may count toward the degree. Specific course requirements must be completed in one of the following areas:

Composition: two courses in bibliography (Music 200); one course in analysis (Music 201); one course in history (Music 220); two courses in directed reading (Music 250); six courses in graduate studio composition (Music 212); three courses in graduate projects (Music 240); two quarters of tutorials (Music 190); one quarter of tutorials (Music 191); three electives; participation in recitals of student compositions as assigned by the Department of Music each quarter of residence; preparation of a project in composition, supported by a written essay of about 20 pages.

Choral Conducting or Voice: two courses in bibliography (Music 200); one course in analysis (Music 201); one course in history (Music 220); two quarters of tutorials (Music 190); five courses in graduate studio vocal literature (Music 210); one quarter of tutorials (Music 191); two courses in directed reading (Music 250); three quarters of graduate projects (Music 240); four electives; participation in a large ensemble as assigned by the Department of Music each quarter of residence; preparations of a project in performance, supported by a written essay of about 20 pages.

Piano Performance: two courses in bibliography (Music 200); one course in analysis (Music 201); one course in history (Music 220); one course in directed reading (Music 250); six courses in graduate studio instrumental literature (Music 211); three quarters of graduate projects (Music 240); six quarters of chamber ensembles and performance, of which at least two will be devoted to contemporary music (Music 176); three electives. There will be a solo recital at the end of each of the two years of residence.

Instrumental Performance: two courses in bibliography (Music 200); one course in analysis (Music 201); one course in history (Music 220); one course in directed reading (Music 250); six courses in graduate studio instrumental literature (Music 211); six quarters of chamber ensembles and performance, of which at least two will be devoted to contemporary music (Music 176); three quarters of graduate projects (Music 240); three electives. Participation in a large ensemble each quarter of residence, as assigned by the Department of Music. There will be a solo recital at the end of the second year of residence.

Courses in Music

Lower-Division

2 Percussion Laboratory (1). Introduction to percussion instruments and basic performing skills and notations. Prerequisites: restricted to Office of Teacher Education students pursuing a teaching credential; ability to read music.

4A-B-C History of Western Music (4-4-4) F, W, S. A survey of styles in Western music from ancient times to the present. Emphasis on acquiring a thorough knowledge of specific examples of music representing the principal styles of Western art music. For nonmajors and minors in Music. (IV)

5A-B-C Musicianship I (2-2-2) F, W, S. Sight-singing, harmonic, rhythmic, and melodic dictation; exercises in rhythm. Corequisites: enrollment in freshmen theory (Music 30A-B-C) and piano (Music 10), or demonstrated proficiency. Prerequisite: Music major or consent of instructor.

6 Instrumental Laboratory (2-2-2). Basic studio introduction to strings, winds, and brass instruments. Students must provide their own instruments. Prerequisites: restricted to Office of Teacher Education students entering in or enrolled in the single-subject teaching credential program; Music 25 or equivalent.

10 Basic Piano (2) F, W, S. For music majors with little or no piano experience, this course 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.

15A-B-C Musicianship II (2-2-2) F, W, S. Two- to four-part dictation, sight-singing including simple atonal melodies, keyboard harmony, C clefs. Corequisite for 15A: Music 35A. Corequisite for 15B: Music 35B. Prerequisites: Music 5A-B-C or equivalent.

18 Basic Voice (2) F, W, S, Summer. Class instruction for nonmusic majors. Students must be enrolled in Music 162 or Drama 165 in the current year. Prerequisite: Music 25 or consent of instructor.

20 The Nature of Music (4) F. A nonhistorical introduction designed to teach students how to listen to music by immediate response to its basic elements. Neither an ability to read music, nor any extensive familiarity with it, is required.

25 Fundamentals of Music (2) F, S, Summer. Scales, key signatures, notation, basic progressions, intervals, reading, intonation, transposition, basic rhythms.

30A-B-C Theory I (4-4-4) F, W, S. The study of traditional common-practice diatonic harmony, through written and keyboard drill. Basic harmonic theory, triads, seventh chords, sequences, modulation, elementary figured basses. Prerequisite: Music 25 or equivalent.

35A-B-C Theory II: Chromatic Harmony (4-4-4) F, W, S. Two-, three-, and four-part writing; altered and chromatic chords; extended modulations and large-scale harmonic structure. Corequisite for 35A: Music 15A. Corequisite for 35B: Music 15B. Prerequisites: Music 30A-B-C or equivalent.

40A-B-C History of European Music to Wagner (4-4-4) F, W, S. A survey of Western music. An introduction to the analysis of musical styles and forms and to the sources for constructing music history and reconstructing historical music. **40A:** to Josquin; **40B:** to J.S. Bach; **40C:** to Richard Wagner. Prerequisites: Music 5C and 30C or equivalent; Music 35B recommended for 40C. Open to Music majors and qualified Music minors only. (IV)

43 Tonal Counterpoint (4) S. Exercises and composition in two- and three-part writing, canon, and fugue. Prerequisite: Music 35B or equivalent. Open only to music majors.

63A-B-C Vocal Performance: Diction and Movement (2-2-2) F, W, S. Diction and movement techniques; the International Phonetic Alphabet and fundamentals of song interpretation for the stage. Music majors and Music minors concentrating in voice only. **63A:** English and Italian; **63B:** French and German; **63C:** Topic varies. May be repeated for credit.

65 Intermediate Piano (1 to 2) F, W, S. Private weekly lessons for piano students in the B.A. program and Music minors. By audition only. May be repeated for a maximum of 12 units of credit.

68 Intermediate Voice (1 to 2) F, W, S. Private weekly lessons and coaching for lower-division students in voice, upper-division voice students in the B.A. program, and Music minors. Corequisite: Music 162 or 171. May be repeated for a maximum of 12 units of credit.

77 Private Lesson (Special String Performance majors) (4) F, W, S. A one-hour weekly private lesson. Instruction in technique and literature. For lower-division Special String Performance students only. May be repeated for credit.

78 History of Jazz (4) W. A survey of American jazz from its African and African-American folk origins through blues, early jazz, Free Jazz, and contemporary developments. (VII-A)

92 Sophomore Recital (0) F, W, S. Solo or joint public recital by audition only and with departmental approval. Prerequisites: Music 5A-B-C; 30A-B-C. Corequisite: Music 174, 175, or 176. Open to music majors and minors, except students concentrating in voice. Pass/Not Pass Only.

Upper-Division

135A Modal Counterpoint (4) F. Exercises and composition in two-, three-, and four-part writing in the sixteenth-century style. Prerequisite: Music 5C, Music 30C, or equivalent.

135B Advanced Counterpoint (4) W. Advanced exercises and composition in two- and three-part tonal writing, canon, and fugue, as well as some contemporary forms. Prerequisite: Music 43.

136 Orchestration (4) W. Ranges and capabilities of modern orchestral instruments. Exercise in writing for various combinations of wind, string, and percussion instruments and for full orchestra. Although designed for

music majors, the course is open to anyone possessing the requisite theoretical background. Prerequisites: Music 30C or equivalent; Music 5C. Formerly Music 170.

NOTE: Courses in the 140–145 sequence are for Music majors and include such topics as: The Motet in the Thirteenth and Fourteenth Centuries (140), Renaissance Keyboard Music (141), The Cantatas of Bach (142), Mozart's Operas (143), Early Nineteenth-Century Opera (144), Schoenberg, Bartók, and Stravinsky (145). Topics vary from quarter to quarter; each course may be repeated for credit. In addition, special courses in the 140–145 series numbered N are also offered for nonmajors.

140 Studies in Medieval Music (4)

141 Studies in Renaissance Music (4)

142 Studies in Baroque Music (4)

143 Studies in Classical Music (4)

144 Studies in Romantic Music (4)

145 Studies in Twentieth-Century Music (4) S

150A-B-C Composition (4-4-4) 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 15C, 30C or equivalent, or consent of instructor. May be repeated for credit.

155A-B Analysis (4-4) F, W. Methods of formal analysis applicable to all Western musical styles: additive, continuous, transformational, and hierarchical forms; rhythm, texture, and sonority as form and process. Prerequisite: Music 15C, 35B, and 40B-C, or equivalent.

160 University Orchestra (1 to 2) F, W, S. Study and performance of standard orchestral repertoire and works by contemporary composers. Emphasis on ensemble techniques including articulation, balance, phrasing, expression, accompanying. Two concerts per quarter; musicians required to attend all rehearsals. One unit of credit for Music majors; two units of credit for Music minors and nonmajors. May be repeated for credit.

160L Orchestral Tutorial (1 to 2) F, W, S. Tutorial instruction for individual players in the University Orchestra, combining private instruction with independent practice. Corequisite: Music 160. Open to Music minors and Music majors in the B.A. program who have completed 12 units of tutorial credit; and only upon consent of the Director of the Orchestra.

161 University Wind Ensemble (2). An ensemble devoted to the study and performance of music written for varying combinations of wind and percussion instruments. Concerts typically include works for small groups (e.g., octets), as well as those for full symphonic wind ensemble. Membership open to both Music majors and nonmajors by audition only. May be repeated for credit.

162 University Chorus (2) F, W, S. Included in the University Chorus are Concert Choir, Freshman Chorus, Men's Chorus, Women's Chorus, Jazz Choir, Collegium Musicum. Each quarter a major concert is prepared, often with orchestral accompaniment. Membership is open by audition. May be repeated for credit.

162L Basic Voice Laboratory (2) 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. Intended for, but not restricted to, Music majors and minors concentrating in piano performance. By audition only. Prerequisite: Music 30C or equivalent. May be repeated for credit.

163A Vocal Performance: Repertory I (2) F. Technique, diction, and interpretation through the preparation in repertory of English and Italian (in alternate years), mastering the International Phonetic Alphabet, developing a critical ear for intelligibility. Students prepare songs from the standard repertoire to be presented in public recitals. Limited to Music

majors and minors concentrating in voice and to University Extension students by audition. May be repeated for credit.

163B Vocal Performance: Repertory II (2) W. Technique, diction, and interpretation through preparation of repertory in French and German (in alternate years), mastering the International Phonetic Alphabet, and developing stage presentation and style. Limited to Music majors and minors concentrating in voice and to University Extension students by audition. May be repeated for credit.

163C Vocal Performance: Special Topics (2) S. A workshop on changing topics such as operatic scenes, modern music, extended vocal techniques, single composers (e.g., Mozart). Gesture, stance, stage presence, and acting are stressed. Only for Music majors concentrating in voice. May be repeated for credit.

164 Opera Workshop (2). Students participate in staged performances of scenes from complete operas. The aim is to broaden the repertoire of singers by offering them opportunities to become acquainted with a wide variety of operatic roles.

165 Advanced Study in Piano (1 to 2) F, W, S. Designed to give students the technique, musical insight, and performance experience for interpreting works of the piano literature in concert performances. Private weekly lessons. Open to Music majors and minors only. May be repeated for credit.

166 Advanced Study for String Instruments (2) F, W, S. Private weekly lessons. Open to Music majors and minors only. Corequisite: Music 160, 161, 162, or 178. May be repeated for credit.

167 Advanced Study for Wind Instruments (2) F, W, S. Private weekly lessons. Open to Music majors and minors only. Corequisite: Music 160, 161, 162, or 178. May be repeated for credit.

168 Advanced Study in Voice (2) F, W, S. Designed for voice majors; students are selected by audition. Private weekly lessons. Corequisite: concurrent enrollment in Music 162 or 171. May be repeated for credit.

169 Advanced Study for Percussion Instruments (2) F, W, S. Private weekly lessons. Corequisite: Music 160, 161, 178, or 179 as assigned by the Department. Open to Music majors and minors only. May be repeated for credit.

170 Advanced Study for Guitar and Lute (2) F, W, S. Private weekly lessons. Corequisite: Music 174. Open to Music majors and minors only. May be repeated for credit.

171 Chamber Singers (2). A select ensemble specializing in vocal chamber music from all periods. Frequent performances on and off campus. Membership is open to all UCI members by audition.

172 Chamber Orchestra (2). An ensemble of 12-20 members. Open to all UCI students by audition. May be repeated for credit.

173 Band (2). A 40- to 50-member ensemble which plays classical, jazz, and pop arrangements for athletic events and social and charity functions both on and off campus.

174 Guitar and Lute Workshop (2) F, W, S. A practical class for the improvement of sight-reading skills by ensemble playing. The workshop also covers specialized forms of notation employed for the guitar and lute, and the history and literature of these instruments. May be repeated for credit.

175 Piano Repertory (2) F, W, S. Weekly two-hour meetings for students to perform before each other, followed by open discussion. The aim is to develop a sense of self-criticism and the ability to listen intelligently. Normally each student also participates quarterly in piano recitals. May be repeated for credit.

176 Chamber Ensembles and Performance (2) F, W, S. A class for instrumental majors (woodwind, brass, strings, percussion, guitar, lute, piano) wherein members perform solo and chamber music at each meeting before their fellow students. Critical listening and constructive criticism are encouraged. May be repeated for credit.

177 Private Lesson (Special String Performance majors) (4) F, W, S. A one-hour weekly private lesson. Instruction in technique and literature for Special String Performance option at junior and senior levels. Corequisite: Music 196. May be repeated for credit.

178 Jazz Band (2) 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.

179 Percussion Ensemble (2) F, W, S. Instrumental performance experience in percussion. Principles of percussion performance practices including individual styles. Prerequisite: ability to read music and/or understanding of common musical usages and notations. May be repeated for credit.

180 Music Criticism (4). Topics vary.

190 Studio Tutorials in Music (2) F, W, S. Private lessons for Music majors and minors in guitar/lute and percussion, as well as for graduate composition students in piano, strings, winds, voice, guitar/lute, and percussion. May be repeated for credit.

191 Tutorial in Music (4) F, W, S. May be repeated for credit.

192J Junior Recital (0) F, W, S. Solo or joint public recital by audition only and with departmental approval. Prerequisites: Music 15A-B-C; 35A-B. Corequisite: Music 163, 174, 175, or 176. Open to music majors only. Pass/Not Pass Only.

192S Senior Recital (0) F, W, S. Solo public recital by audition only. Prerequisites: Music 15C; 35B; 40A-B-C or equivalent; 155A. Corequisite: Music 163, 174, 175, or 176. Pass/Not Pass Only.

193 Conducting (4) S. Fundamentals of baton technique, score study, transposition, and orchestration. Prerequisites: Music 15C and Music 40A-B-C or equivalent. May be taken for credit two times. Formerly Music 169.

194 Chamber Music (2) F, W, S. Performance of classical, romantic, and contemporary chamber music works. Includes private coaching (every other week) and an open forum for constructive criticism by class members. Open to string players and a limited number of woodwind players and pianists by audition. May be repeated for credit.

195 String Quartet Proseminar (2) F, W, S. Designed to acquaint string players with the repertoire of the string quartet through open rehearsals and seminars. May be repeated for credit.

196 Special String Senior Recital (4) F, W, S. A full, public recital to be given in the senior year. The program must include works from the major periods of music (e.g., Baroque, classical, romantic, modern). For Special String Performance students only. Corequisite: Music 177. May be repeated for credit.

197 Vocal Accompanying (2) F, W, S. Designed for advanced singers and pianists. Performance practice, styles of vocal literature: German *Lieder*, French *mélodies*, twentieth-century art song.

198 Music Workshop (4) F, W, S. May be repeated for credit.

Graduate

All graduate courses may be repeated for credit except Music 201.

200 Bibliography and Research (4-4) F, W. 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.

201 Analysis (4) S. Various approaches to analysis through concentrated study of a small number of selected works.

210R Graduate Studio: Vocal Literature (4-4-4) F, W, S. Includes studies in vocal literature, vocal pedagogy, and diction and performance.

211R Graduate Studio: Instrumental Literature (4-4-4) F, W, S. Contents will vary according to the student's major instrument. The core of this course is intensive private instruction and study of the various instrumental literatures.

212 Graduate Studio: Composition (4-4-4) F, W, S. Intensive work in composition geared to each student's level of competence.

218 Graduate Voice Tutorial (2-2-2) F, W, S. Advanced studies in vocal technique. Private weekly lessons. May be repeated for credit. Prerequisite: acceptance into graduate program in Drama with an emphasis on music theatre.

220 Seminar in Music History (4)

230 Seminar in Contemporary Music (4) F, W, S. Special seminar projects dealing with music of the twentieth century with emphasis on analytical techniques and style criticism.

240 Graduate Projects (4-4-4) F, W, S. Contents vary according to the student's area of concentration. For composers contents include preparation of works for performance; for singers and choral conductors contents include study of conducting and the preparation of solo and choral works for performance; for pianists contents include master classes in performance; and for other instrumentalists contents include participation in the University Orchestra.

250 Directed Reading (4)

260 Thesis (4). By consent.

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants.

Department of Studio Art

176 Sculpture Studio; (714) 856-6648

Catherine Lord, **Department Chair**

Faculty

Jerry Anderson, M.F.A. University of Arizona, *Lecturer in Studio Art* (new directions in art forms)

Judy Baca, M.A. California State University, Northridge, *Associate Professor of Studio Art* (drawing, murals)

Ed Bereal, Chouinard Art Institute, *Lecturer in Studio Art* (performance using social/political themes and video documentation)

Karen Carson, M.F.A. University of California, Los Angeles, *Lecturer in Studio Art* (painting)

Jane Cottis, M.F.A. University of California, San Diego, *Lecturer in Studio Art* (video)

Tony DeLap, Claremont Graduate School, *Professor of Studio Art* (painting and design, architecture)

Thomas W. Jenkins, M.F.A. University of Colorado, *Lecturer in Studio Art* (sculpture, painting)

Susan Jordan, M.F.A. University of California, Irvine, *Lecturer in Studio Art* (visual fundamentals)

Craig Kauffman, M.F.A. University of California, Los Angeles, *Professor of Studio Art* (drawing and painting)

Ronald Linden, M.F.A. University of Illinois, Champaign-Urbana, *Lecturer in Studio Art* (drawing and painting)

Catherine Lord, M.F.A. State University of New York, *Department Chair and Associate Professor of Studio Art* (critical theory, feminism, photography)

Robin Mitchell, M.F.A. California Institute of the Arts, *Lecturer in Studio Art* (drawing and painting)

Gifford C. Myers, M.F.A. University of California, Irvine, *Assistant Professor of Studio Art* (ceramics)

Rena Small, M.F.A. California Institute of the Arts, *Lecturer in Studio Art* (photography)

John White, M.F.A. University of California, San Diego, *Lecturer in Studio Art* (performance)

Melinda Wortz, M.A. University of California, Los Angeles, *Lecturer in Studio Art, Director of the University Fine Arts Gallery* (art history, museum problems with emphasis on contemporary artists and exhibitions)

The Department of Studio Art takes a wide-ranging, interdisciplinary view of contemporary art practice. The Department prefers a demanding, conceptual approach to work in process, rather than emphasizing 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, and photography and video, in addition to emphasizing art history and theory 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. Special programs for Studio Art

majors are offered in Venice (for graduate-level study also) and in Florence; the latter program, at Il Bisonte, focuses on lithography and intaglio printmaking.

Careers for the Studio Art Major

Departmental faculty and the range of artists whose work is represented in the UCI Fine Arts 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 Bachelor's Degree

University Requirements: See pages 50–53.

School Requirements: None.

Departmental Requirements for the Major

Studio Art 30A-B-C (taken the first year in residence); Art History 40A-B-C or 42A-B-C; five lower-division courses in at least three different media (Studio Art 50A, 60, 70, 80, 86, 90, 91, 96); three quarters in history of modern art; 12 upper-division studio courses (Studio Art 145 through 199).

Sample Program for Freshmen

Fall	Winter	Spring
Studio Art 30A	Studio Art 30B	Studio Art 30C
Art History 40A/42A	Art History 40B/42B	Art History 40C/42C
Elective	Elective	Elective
English and Comparative Literature WR39A	English and Comparative Literature WR39B	English and Comparative Literature WR39C

Master of Fine Arts Program

Degree Offered

M.F.A. in Studio Art.

General Information

The M.F.A. program is a small program directed to the independently motivated student. The focus is on defining, and refining, individual direction in relation to contemporary practice. The emphasis is on experimental, intermedia approaches rather than on the acquisition of traditional techniques. Independent work with faculty is encouraged, and maximum latitude is given in developing individual research and exhibition projects. Graduate courses combine rigorous critique situations, with faculty as well as visiting artists, and seminars focusing on various aspects of contemporary art theory. Graduate students have regular opportunities to exhibit in the UCI Fine Arts Gallery.

The program of visiting artists and lecturers is an integral part of the graduate experience. Recent visitors have included May Sun, Li Huai, David Avalos, Jon O'Brien, Pat Ward Williams, Douglas Crimp, Hachivi Edgar Heap of Birds, Lari Pittman, Sunil Gupta, Barbara Kruger, Connie Hatch, and Nancy Buchanan.

Off-campus graduate student studio space is available on a limited basis by application to the chair of the Department. Facilities support wood and metal work, video, photography, and painting.

Admission

Applicants for admission to the degree program must meet the general requirements for admission to graduate study, hold a B.A. or B.F.A. in Art, and submit by March 1 a portfolio of their creative work or 20 or more slides, on a #80 Kodak Carousel tray, of their most recent work, or other documentation. Normally, anyone who has earned an M.F.A. degree in Studio Art will not be considered for admission into the program.

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.

The student's progress and body of work will be reviewed by a faculty committee yearly. A satisfactory opinion by this committee will allow the student to progress to candidacy for the degree.

Satisfactory attainment must be demonstrated by a specific creative project, which usually takes the form of a graduate exhibition in the University Art Gallery. This project is to be supported by a thesis incorporating visual and written material relevant to the project and the candidate's creative research while at UCI. Oral defense of the project is required.

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 or a satisfactory in each course. Not more than 20 units in upper-division courses may count toward the degree. Electives may be taken in any discipline. The 72 units will normally be made up in the following manner:

First Year: three courses in graduate problems (Studio Art 215A-B); three seminars in problems of contemporary art (Studio Art 230); three courses in graduate projects (Studio Art 240).

Second Year: two courses in graduate problems (Studio Art 215A-B); two seminars in problems of contemporary art (Studio Art 230), one additional course in Studio Art 215A-B or Studio Art 230; three courses in graduate projects (Studio Art 240); one course in thesis (Studio Art 260).

Courses in Studio Art

Lower-Division

30A-B-C Visual Arts Fundamentals (4-4-4) F, W, S. Addresses the individual's relationship with art through a series of experiences and exercises which include reading materials, studio art projects using specifically designated materials, slides, and discussion. The art projects deal with environment, space, time, form, and personal content. Must be taken sequentially. Basic foundation for studio art majors. (IV)

35A-B-C Contemporary Artists (4-4-4) F, W, S. Concepts and processes of contemporary artists. An exploration of the issues and artists of contemporary times, with special emphasis on art of the last 40 years. Slide lectures are supplemented with field trips to museum exhibitions, private collections, and artists' studios, and with films. Reading consists of artists' writings and those of contemporary critics. Must be taken sequentially. Same as Art History 35A-B-C. (IV)

50A Basic Drawing (4) F, W, S. Basic techniques and introduction to drawing materials and surfaces. Life drawing and still-life drawing focusing on skill development and "learning to see." May be taken for credit three times with consent of instructor.

60 Basic Painting (4) F, W, S, Summer. A five-hour course taught weekly by regular faculty members or visiting artists. Encourages experimental use of painting techniques dealing with a variety of problems in basic structure, elements of space, and surface quality. Classes often move into experimental fields with discussions on historical development of painting and formal approaches to this medium. Slides and discussion/critiques; occasional field trips. May be taken for credit three times with consent of instructor.

70 Basic Sculpture (4) F, W, S. An introduction to a variety of techniques used to fabricate three-dimensional objects. Cutting, joining, and assembly of wood, metal, and plastic; casting, modeling, and carving. May be taken for credit three times with consent of instructor.

80 Basic Printmaking (4) F, W, S. Basic techniques, materials, and methods including relief and intaglio. Emphasizes techniques and development of aesthetic expression. May be taken for credit three times with consent of instructor.

86 Basic Ceramic Sculpture (4) F, W, S. Exploration of the use of clay on a sculptural basis with an emphasis on development of an idea. Hand-building, glazing, finishing processes, and use of other structural materials. Experimentation encouraged. Laboratory fee. May be taken for credit three times with consent of instructor.

90 Basic Video (4-4-4) F, W, S. Introduction to the tools of video and television production: cameras, lighting, microphones, video recording and editing machines. Use and application of video in studio and electronic news-gathering.

91 New Concepts/Performance Art I (4-4-4) F, W, S. Introduction to the concepts and history of performance art. Exploration of basic elements of audience- and non-audience-oriented performance and the relationship of performance art to other arts.

96 Basic Photography and Art (4-4-4) F, W, S. A workshop covering camera function, equipment, and use; processes such as spotting, bleaching, hand-coloring, development, enlargement and presentation, and papers. Emphasis on self-expression through assignments, and critiques. Students must have 35 mm manual camera. Fee for materials.

Upper-Division

With the exception of Studio Art 197A, 197B, 197C, and 198, all advanced problems, special studies, and tutorial courses may be repeated for credit.

145 The Art of Architecture (4) F, W, S. Early Modernism, the influence of Cubism on architecture, and philosophy of Early Modernism (The International School). Late- and Post-Modernism and what is happening today between artists and architects. Students construct models, present drawings, and paintings related to topics. Prerequisites: Studio Art 30A-B-C, Studio Art 35A-B-C, and one studio course.

150A-B Intermediate Drawing (4-4) F, W, S, Summer. Continuation of basic drawing exercises with emphasis on composition and experimentation with media. Conceptual foundation for an individual art-making process, explored with an emphasis on self as subject matter. Prerequisites: Studio Art 50A and 35A-B-C.

150C Advanced Drawing (4) F, W, S. Advanced studio problems for visual exploration. Students pursue individual solutions to self-defined and prescribed projects. Techniques/materials are individual choice. Continual analysis of the personal process. Prerequisites: Studio Art 50A, 150A-B. May be repeated for credit with consent of instructor.

160A-B Intermediate Painting (4-4) F, W, S. An introduction to twentieth-century art history. Experience in the use of paint and other related materials typical to this era. Slides, film, video, field trips. Prerequisite: Studio Art 60.

160C Advanced Painting (4) F, W, S. Students deal with and present ideas which relate to contemporary painting. Slides, field trips, and discussions with the artist/instructor. Prerequisites: Studio Art 30A-B-C and 160A-B.

170A-B Intermediate Sculpture (4-4) F, W, S. Prerequisites: Studio Art 35A-B-C and 70.

170C Advanced Sculpture (4) F, W, S. Development of a personal direction in and in-depth exploration of contemporary sculpture art. Prerequisite: Studio Art 170A-B.

180A-B Intermediate Printmaking II (4-4) F, W, S. Addresses techniques and processes of intaglio printing, dry point, grounds, photoetching, and a variety of experimentation on the etching plate. Prerequisites: Studio Art 35A-B-C and 80. May be repeated for credit with consent of instructor.

180C Advanced Printmaking (4) F, W, S. Concentration on personal development through intensive focus on conceptual and experimental use of a chosen print medium, and the development of technical skills. Prerequisites: Studio Art 180A-B.

186A-B Intermediate Ceramic Sculpture (4-4) F, W, S. Development of technical and conceptual skills related to ceramic sculpture. Hand-building, casting, glaze formulation, kiln building, and firing. Prerequisites: Studio Art 35A-B-C and 86.

186C Advanced Problems in Ceramic Sculpture (4) F, W, S. Discussion of ideas, techniques, and personal control of form. Clay body, fabri-

cation, glazing, and firing. Emphasis on development of personal direction. Prerequisites: Studio Art 186A-B. May be repeated for credit with consent of instructor.

188 History of Intermedia (4) F, W, S. The history of intermedia in the twentieth century—the entire realm of artwork that melds otherwise discrete artistic disciplines into a seamless unity which includes visual poetry, conceptual art, performance art, and music-theatre.

190 Studio Problems: Methods/Materials (4) F, W, S. Presentation of projects which cannot be dealt with in other more specifically defined studio courses. Emphasis on manifestation of ideas through conversation and presentation of work. May be repeated for credit.

191A-B Intermediate Performance Art I, II (4-4) F, W, S. Further exploration of the elements of performance. Emphasis on individual work. Examination of methods of creating performance pieces and technical aspects of presentation. Prerequisites: Studio Art 35A-B-C and Studio Art 91.

191C Advanced Performance Art III (4) F, W, S. Advanced study in performance art. Critical analysis of individual performance work and how it applies to the field and society at large. Prerequisites: Studio Art 191A-B. May be repeated with consent of instructor.

192 Studio in Painting (4)

193 Studio in Sculpture (4)

194 Studio in Graphic Art (4)

195 Art Museum Problems (4). Lectures and practical experience in staffing the UCI Fine Arts Gallery, preparing for exhibitions, receptions, and learning the basic technical and operational needs of a gallery. Students interact directly with professional artists. Field trips, critiques, and internship programs with other museums and galleries are available.

196A Intermediate Photography and Art (4) F, W, S, Summer. Refined skills in developing, printing, enlarging. Expanded use of dark-room, solution of technical problems, development of personal style and concepts through assignments. Must have 35 mm. camera. Prerequisites: Studio Art 96 or portfolio review; consent of instructor. Laboratory materials fee. May be repeated with consent of instructor.

196B Advanced Photography and Art (4) F, W, S. Intermediate to advanced lecture and critique on photography and its relationship to producing art. Emphasis on techniques such as black and white printing. Introduction to small cameras. Possibilities of color and conceptual art are explored through assignments. Prerequisites: Studio Art 196A or portfolio review; consent of instructor. Laboratory materials fee. May be repeated with consent of instructor.

197A Narrative Video Production (4) F. Introduction to basic elements and styles of video and television. Hands-on use of studio and location video equipment. Participation in production exercises. Emphasis on preproduction, original script, and storyboard. Prerequisite: Studio Art 90 or consent of instructor.

197B Narrative Video Production (4) W. Further exploration of textual usage to create or reinforce dramatic significance of images. Production of script and storyboard produced in Studio Art 197A through use of television studio and/or location production equipment. Prerequisite: completion of Studio Art 197A with a grade of B or better.

197C Narrative Video Production (4) S. In-depth discussion, hands-on experience with aesthetics and techniques of video editing. Emphasis on postproduction process. Departmental screening of finished work. Prerequisites: Studio Art 197A and Studio Art 197B.

198A Intermediate Narrative Video Production (4-4-4) F, W, S. Pre-production, production, and/or editing of a video project. Credit contingent upon instructor's approval of proposed project. Prerequisites: Studio Art 190A or 190B, Studio Art 197C; consent of instructor.

199 Special Study (4) F, W, S. Individual study as arranged with faculty member. Used when special circumstances arise during normal progress of study. Prerequisite: consent of instructor. May be repeated for credit.



The development of a personal photographic style through a variety of assignments, such as portraiture, is emphasized in the Intermediate Photography and Art course (Studio Art 196A).

Graduate

210 Graduate Studio: Painting (4). May be repeated for credit.

211 Graduate Studio: Sculpture (4). May be repeated for credit.

212 Graduate Studio: Ceramics (4). May be repeated for credit.

214 Graduate Studio: Graphic Art (4). May be repeated for credit.

215A Graduate Problems (4) F, W, S. General seminar led by a visiting artist addressing contemporary, social, and art world issues; examines specific work of participants related to those issues. Explores a broad spectrum of disciplines including performance art, music, painting, sculpture, installations, and combinations thereof. May be repeated for credit.

215B Graduate Problems (4) F, W, S. Faculty members select an issue in contemporary art or their own work. Course is intended to ensure that all students are exposed to faculty members on an individual basis. May be repeated for credit.

230 Seminar in Problems of Contemporary Art (4) F, W, S. May be repeated for credit.

240 Graduate Projects (4) F, W, S. May be repeated for credit.

250 Directed Reading (4). May be repeated for credit.

260 Thesis (4) S. Limited to second-year graduate students preparing for candidacy during their final quarter.

399 University Teaching (4) F, W, S. Limited to Teaching Assistants. May be repeated for credit.

School of Humanities

Terence D. Parsons, **Dean**

100 Humanities Annex

Undergraduate Counseling: (714) 856-5132

Graduate Counseling: (714) 856-4303

The School of Humanities consists of the fundamental areas of history, philosophy, and literature. Questions about knowledge and language, ethical and aesthetic value, the nature of human identity, and the history of people's thoughts and actions are typical of humanists' concerns, and because every thinking person takes up such questions throughout the course of life, the humanities occupy a central place in every liberal education.

Because language is the humanist's essential tool and the means through which most of history has been recorded, the School of Humanities places special emphasis on language and training in composition. The campuswide Writing Program is housed in the School of Humanities.

Although the study of literature, history, and philosophy entail discrete methods and disciplines, these fundamental areas overlap and intersect in their interests. The School of Humanities requires all its majors to take the Humanities Core Course, which integrates the study of philosophy, literature, and history along with the study of composition. Interdisciplinary studies are also an essential feature of Women's Studies, the Humanities Honors Program, Film Studies, and Comparative Literature. The School also offers an emphasis in creative writing and has close ties with the School of Social Sciences' Program in Linguistics.

Because humanists deal analytically with the most complex problems and issues affecting people, students majoring in the humanities are particularly well-prepared for careers not only in schools and universities, but in all fields in which analysis, judgment, and argument are important. Thus a background in the humanities is particularly advantageous as preparation for careers in such fields as management, communications, diplomacy, the law, social work, politics, and medicine.

Degrees

Chinese Language and Literature	B.A.
Classical Civilization	B.A.
Classics	B.A., M.A., Ph.D.
Comparative Literature	B.A., M.A., Ph.D.
English	B.A., M.A., M.F.A., Ph.D.
Film Studies	B.A.
French	B.A., M.A., Ph.D.
German	B.A., M.A., Ph.D.
History	B.A., M.A., Ph.D.
Humanities	B.A.
Japanese Language and Literature	B.A.
Philosophy	B.A., M.A., Ph.D.
Russian	B.A.
Spanish	B.A., M.A., M.A.T., Ph.D.

Honors at Graduation

Students are nominated for honors at graduation on the basis of scholarship and special achievements. To be eligible for nomination the student must, by the end of the winter quarter of the senior year, file an Application for Graduation and meet the following criteria: (1) achieve a UC grade point average of at least 3.50, (2) complete at least 18 courses (72 units) in residence at a UC campus, and (3) receive strong recommendation from the major department. Eligible students are automatically considered for Honors at Graduation. Students must graduate no later than spring quarter to receive Honors at Graduation.

Humanities Computing Facilities

The Humanities Computing Facilities (HFC) provide computer-assisted research and instructional development for faculty and both graduate and undergraduate students within the School of Humanities. For information about the HFC, telephone (714) 856-8493 or visit 213 Humanities Hall.

Language Learning Resource Center

The Language Learning Resource Center (LLRC) provides facilities, services, and resources in support of foreign language and English-as-a-second-language instruction at UCI and throughout the extended UCI community.

Audiotaped and videotaped materials and computer hardware and software are among the resources available to students and faculty. LLRC services include training faculty in the use of instructional technologies for foreign language teaching; providing forums for sharing teaching techniques; and supplying referrals for translation, interpretation, and tutoring needs.

Facilities within the LLRC include a Language Laboratory system for classroom instruction (207A Humanities Hall), a Listening Laboratory for drop-in use (207 Humanities Hall), an audio production and duplication facility, and a Humanities computer laboratory for both classroom instruction and drop-in use (213 Humanities Hall). Also housed within the LLRC is the Humanities Computer Consulting Office (213 Humanities Hall).

LLRC hours are Monday through Friday, 8 a.m. to 4 p.m. For additional information telephone (714) 856-6344.

Undergraduate Programs

The School offers undergraduate majors in Chinese Language and Literature, Classical Civilization, Classics, Comparative Literature, English, Film Studies, French, German, History, Humanities (an interdisciplinary major which allows students to design their own majors), Japanese Language and Literature, Philosophy, Russian, Spanish, and a Women's Studies emphasis within the Humanities major. In addition, the School offers minors in Global Peace and Conflict Studies and Latin American/Chicano Studies, formal concentrations in Medieval Studies and Religious Studies, and courses in Italian and Portuguese.

Although the School of Humanities no longer offers a program in linguistics, any UCI student who is currently enrolled, or who will enroll during the 1991-92 academic year, may elect to complete the Linguistics major in the School of Humanities as described in the 1990-91 *General Catalogue*. Additionally, a program leading to the B.A. degree in Linguistics is available through the School of Social Sciences.

The Humanities Undergraduate Counseling Office, located in the Humanities Annex Building, is prepared to help all students in planning a program of study. Transfer students in particular will 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.

A corps of lower-division advisors is designed to meet the special needs of freshmen and sophomores who are interested in the humanities but who have not chosen a major in the School. The advisors are particularly interested in undergraduate education and 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 lower-division advisor is prepared to help the undeclared student



Film Studies majors study the history, theory, and aesthetics of cinema; a wide array of national cinemas; individual filmmakers, period styles, and genres; and practical and technical aspects of film production and scriptwriting.

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 of various departments, by sitting with the faculty in its meetings, and by serving on the Humanities Council, which directly advises the Dean.

Humanities Honors Program

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' 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 an interdisciplinary three-quarter Proseminar (Humanities H120A-B-C) organized about a single topic or problem, such as crime and punishment, 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 H139), which also meets the UCI upper-division writing requirement, and continuing in the winter and spring with the Senior Honors Thesis (Humanities H140-H141), prepared as an independent research project under the direction of a faculty member on a topic chosen by the student. Students present their thesis 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 (714) 856-5132.

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 more than 85 host universities and colleges in 33 countries throughout the world. See the Education Abroad Program section for additional information.

Requirements for the Bachelor's Degree

University Requirements: See pages 50–53.

School Requirements

Satisfactory completion of the following, which must be taken for *letter grades*: Humanities 1A-B-C, taken in the freshman year (transfer students may substitute appropriate course work in composition, literature, history, humanities, and philosophy for the Core Course by permission; apply in the Humanities Undergraduate Counseling Office); two years of work in a single acceptable foreign language, either modern or classical (through 2C), or equivalent competence; quarterly consultation with an assigned advisor and the advisor's written approval for the program of study decided upon. Consultation should be made by the second week of each quarter.

Foreign Language Placement. Students entering UCI with previous foreign 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 foreign language will normally enroll in 1B-, 1C-, 2A-, or 2B-level language courses, respectively. Exceptions must have the approval of the appropriate course director. Transfer students may not repeat foreign language courses for which they received credit upon matriculation to UCI.

Maximum Overlap Between Major Requirements: Students completing double majors within the School of Humanities may count no more than two courses for both majors simultaneously (i.e., a double major in Comparative Literature and Spanish can count only two upper-division Spanish literature courses for both majors).

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 requirements for specific courses.

Graduate Programs

The School offers a wide program of graduate degrees. Although the Master's degree is offered in most departments, the programs emphasize the Ph.D. and give distinct preference in admission to those students who intend to take that degree. Exceptions are the two-year Master of Fine Arts in English (Creative Writing) and the two-year Master of Arts of Teaching in Spanish. In addition to the seminars offered by the various departments, the School sponsors a number of interdisciplinary seminars annually. These courses are taught jointly by faculty members from various departments. Further, several departments offer a few students the opportunity 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 Office of Teacher Education.

Graduate students in the School of Humanities participate in the affairs of the School by serving on committees of the various departments and sitting with the faculty in its meetings.

Department of Classics

142 Humanities Hall; (714) 856-6735

Dana F. Sutton, **Department Chair**

Faculty

Luci Berkowitz, Ph.D. The Ohio State University, *Professor of Classics* (pastoral poetry, literary criticism)

Theodore F. Brunner, Ph.D. Stanford University, *Professor of Classics and Director, Thesaurus Linguae Graecae Project* (computer application to classical literature, Augustan literature)

Walter Donlan, Ph.D. Northwestern University, *Professor of Classics* (early Greek literature and social history)

Richard J. Frank, Ph.D. University of California, Berkeley, *Associate Professor of Classics and History* (Roman history, Classical tradition)

B.P. Reardon, D.U. Université de Nantes, *Professor of Classics* (Late Greek literature, Greek novel)

Patrick Sinclair, Ph.D. Northwestern University, *Assistant Professor of Classics* (Latin prose, lexicography)

Dana F. Sutton, Ph.D. University of Wisconsin, *Department Chair and Professor of Classics* (Greek and Latin drama, Greek poetry)

Undergraduate Program

The Department of Classics aims to provide the undergraduate student with a working knowledge of the origins and heritage of Western 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 high achievements of Greek and Roman culture and their pervasive influence on our own civilization.

The Department offers both a major in Classics (with an emphasis on Greek, Latin, or Linguistics) 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 program.

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. 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 gain first-hand knowledge of the literature, history, and thought of the ancient world through the close study of some of its finest writers.

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.

The student planning to major in Classics or Classical Civilization should obtain a copy of the brochure, "Undergraduate Study in Classics," available in the departmental office.

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, 25, and 101 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 staff 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 departmental meetings. They 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, 142 Humanities Hall, telephone (714) 856-6735 or 856-5896.

Hebrew and Judaic Studies

Courses in Hebrew and Judaic Studies were initiated by the Department of Classics in September 1976, through a joint agreement between the School of Humanities and the University of Judaism in Los Angeles. Normally two years of Hebrew are offered, which meet the Humanities foreign language requirement. Emphasis is on modern Israeli-spoken Hebrew, with some instruction in Biblical Hebrew during the second year. Hebrew language courses will not be offered in 1991-92. Courses will continue to be offered in aspects of Jewish history, philosophy, and literature (Classics 180A-B-C, 181, and 182A-B-C). Through this program the Department of Classics is able to broaden its offerings to include both the Greek and Hebrew contributions to Western civilization.

Requirements for the Bachelor's Degree

University Requirements: See pages 50-53.

School Requirements: See page 148.

Departmental Requirements for Majors

Two separate majors: Classics (with an emphasis in Greek, Latin, or Linguistics) and Classical Civilization.

Classics (Greek emphasis): Greek 1A-B-C; Greek 25; Greek 101-102; Greek 105A-B-C; Greek 110; Latin 1A-B-C; Latin 25; Latin 101-102.

Classics (Latin emphasis): Latin 1A-B-C; Latin 25; Latin 101-102; Latin 105A-B-C; Latin 110; Greek 1A-B-C; Greek 25; Greek 101-102.

Classics (Linguistics emphasis): two possible plans of study. *Greek concentration*—Greek 25, 101, 102, 105A-B-C; Latin 25, 101, 102; Linguistics 3, 110, 120, 170 (Greek 120 recommended) or *Latin concentration*—Latin 25, 101, 102, 105A-B-C; Greek 25, 101, 102; Linguistics 3, 110, 120, 170 (Latin 120 recommended).

NOTE: With the permission of the Department, an additional course at the 100 level in the same language may be substituted for Greek or Latin 25.

Classical Civilization: Latin (or Greek) 1A-B-C, or equivalent; Classics 35A, 35B, 35C or 50A, 50B, 50C; four upper-division Classics courses; three additional courses in classical history, classical philosophy, or classical art.

Residence Requirement for the Major: At least five upper-division courses required for the major must be completed successfully at UCI.

Departmental Requirements for Minors

The Department offers minors in Greek, Latin, and Classical Civilization.

Greek: Greek 1A-B-C, 25, 101, 102, 105A-B-C. Greek 120 may be substituted for one course at the 100 level.

Latin: Latin 1A-B-C, 25, 101, 102, 105A-B-C. Latin 120 may be substituted for one course at the 100 level.

Classical Civilization: Classics 35A, 35B, 35C or Classics 50A, 50B, 50C; five courses from Classics 140, 150, 151, 160, 165, 169, 170.

Residence Requirement for the Minor: Four upper-division courses must be successfully completed at UCI.

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.

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 liberal 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 the Classics. So do many business corporations. Business, industry, and technology are well acquainted with the value of a Classical education. 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 Career Planning and Placement Center provides services to UCI 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 Planning and Placement Center section for additional information.

Graduate Program

From the program's inception in 1970, emphasis has been on close attention to each student's progress, together with a relatively high reliance on independent work. Each graduate student is assigned to a faculty preceptor, who monitors student progress in language skills, knowledge of the discipline, competence in research, and experience in teaching. The principal strength of the Department lies in the fields of language and literature. The graduate program is closely connected with the Thesaurus Linguae

Graecae research project, and this especially recommends our program to prospective students interested in computer-assisted research in these areas.

The Department offers a Ph.D. program with specializations in Greek or Latin. The program is based on a three-year cycle of seminar and course work. Graduate students enroll in the following courses each quarter for three years: Classics 220 (seminars, devoted mainly but not exclusively to major literary topics); Classics 230 (directed reading courses, focusing on the graduate reading list); and Classics 240 (Greek and Latin language study, with regular exercises in prose composition and translation).

Diagnostic tests administered at the start of the graduate student's career are used in planning work, so that each student is encouraged to focus their energies and to progress in a steady, organized manner. Progress evaluation examinations are administered regularly in order to identify student strengths and weaknesses. Normally a total of three years of course work is required for the Ph.D. A comprehensive candidacy examination is required after the completion of course work, and a dissertation is required. Experience in supervised teaching and/or research activity normally is required.

All students entering the Ph.D. program, with the exception of those granted advanced standing because they hold the M.A. degree from another institution, will be concurrently enrolled in the M.A. program. The requirements for the M.A. degree will be six quarters of course work (i.e., 72 units), passage of a special set of examinations, and completion of a paper. The normative time for completion of the M.A. degree will be two years. Course work for the M.A. degree will normally consist of three quarters of Classics 210A-B-C, three quarters of Classics 220, six quarters of Classics 230, and six quarters of Classics 240. Completion of a minimum of three quarters of Classics 220 is required. Students will be required to pass a departmentally administered reading examination in German, or otherwise demonstrate proficiency in German in a manner acceptable to the Department, by the beginning of the second year of course work. Demonstration of reading proficiency in German will be a prerequisite to admission to Classics 220 seminars. Upon completion of the requirements for the M.A. degree, a student will be permitted to continue in the Ph.D. program only upon a positive vote of a majority of the Classics faculty.

In addition to the above, instruction is given regularly in the tradition, methods, and tools of classical scholarship, including computer application to literature.

In addition to course work, students are required to read extensively in the general field of Classics, under faculty guidance.

Students take written examinations, and their progress is assessed periodically. Students are required to pass a reading examination in a second modern language by the end of the third year. After course work is completed, each student must pass an individually designed qualifying examination, covering both the general field of Classics and the student's own interests, in order to become a candidate for the Ph.D. and enter the dissertation stage.

The resources of the program are appreciably enhanced by contributions from other sources. In particular, cooperative arrangements are in force among the Classics graduate programs of the UC campuses at Irvine, Los Angeles, Riverside, and Santa Barbara. Additionally, the program calls on visiting scholars, faculty from other UCI departments, and members of the Thesaurus Linguae Graecae Project.

Thesaurus Linguae Graecae Project

The Thesaurus Linguae Graecae Project, a unique resource for research in Greek literary and linguistic studies, is closely affiliated with the Department of Classics although it is administratively separate. For further details, see the Index.

Courses in Greek

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 20A-B-C Intensive Greek (5-5-5) Summer. Offered in summer session only. Covers, in eight weeks, the equivalent of Greek 1A-B-C. Will be offered if enrollment warrants; those interested should contact the Department.

Greek 25 Grammar Review and Survey of Greek Literature (5) F. Intensive review of grammar and survey of Greek literature with an introduction to selected authors for students who have passed 1C or its equivalent or have had two years or more of the language at the high school level. (V)

Greek 99 Special Studies in Greek (4-4-4) F, W, S. Consultation with instructor necessary prior to registration.

Greek 101 Greek Prose (4) W. Introduction to Greek prose with readings from the works of a major prose author such as Herodotus. Prerequisite: Greek 25, equivalent, or consent of the Department. (V)

Greek 102 Greek Poetry (4) S. Introduction to Greek poetry with readings from the works of a major poet such as Homer. Prerequisite: Greek 101, equivalent, or consent of the Department. (V)

Greek 105A-B-C Seminar in Greek Literature (4-4-4) F, W, S. Studies in specific Greek authors and topics arranged in a two-year sequence, i.e., prose, epic, philosophy; drama, history, lyric. May be repeated for credit provided topic varies. Prerequisite: Greek 102, equivalent, or consent of the Department.

Greek 110 Prose Composition (4). Studies in Greek grammar and syntax through composition of sentences and passages in Greek prose. Prerequisite: Greek 25, equivalent, or consent of the Department.

Greek 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.

Greek 198 Directed Group Study (4-4-4) F, W, S. Special topics in Greek culture and civilization through directed reading and research. Consultation with instructor necessary prior to registration.

Greek 199 Independent Studies in Greek (4-4-4) F, W, S. Consultation with instructor necessary prior to registration.

Courses in Latin

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 20A-B-C Intensive Latin (5-5-5) Summer. Offered in summer session only. Covers, in eight weeks, the equivalent of Latin 1A-B-C. Will be offered if enrollment warrants; those interested should contact the Department.

Latin 25 Grammar Review and Survey of Latin Literature (5) F. Intensive review of grammar and survey of Latin literature with an introduction to selected major authors for students who have passed 1C or its equivalent, or have had two years or more of the language at the high school level. (V)

Latin 99 Special Studies in Latin (4-4-4) F, W, S. Consultation with instructor necessary prior to enrollment.

Latin 101 Latin Prose (4) W. Introduction to Latin prose with readings from the works of a major prose author such as Cicero. Prerequisite: Latin 25, equivalent, or consent of the Department. (V)

Latin 102 Latin Poetry (4) S. Introduction to Latin poetry with readings from the works of a major poet such as Vergil. Prerequisite: Latin 101, equivalent, or consent of the Department. (V)

Latin 105A-B-C Seminar in Latin Literature (4-4-4) F, W, S. Studies in specific Latin authors and topics arranged in a two-year sequence, i.e., prose, epic, satire; drama, history, lyric. May be repeated for credit provided topic varies. Prerequisite: Latin 102, equivalent, or consent of the Department.

Latin 110 Latin Prose Composition (4). Studies in Latin grammar and syntax through composition of sentences and passages in Latin prose. Prerequisite: Latin 25, equivalent, or consent of the Department.

Latin 120 Introduction to Vulgar and Medieval Latin (4). Morphological, syntactical, and lexical developments in post-classical Latin illustrated by a variety of texts. Prerequisite: Latin 1C or consent of instructor.

Latin 198 Directed Group Study (4-4-4) F, W, S. Special topics in Roman culture and civilization through directed reading and research. Consultation with instructor necessary prior to enrollment.

Latin 199 Independent Studies in Latin (4-4-4) F, W, S. Consultation with instructor necessary prior to enrollment.

Courses in Hebrew and Judaic Studies

Classics 2A-B-C Hebrew Reading and Composition (4-4-4) F, W, S. Not offered 1991-92. (V)

Classics 180A-B-C Judaic Studies (4-4-4) F, W, S. Jewish culture, history, and philosophy. Topics vary. May be repeated for credit provided topic varies.

Classics 181 Christian-Jewish Relations (4) S

Classics 182A-B-C The Epic of the Jews (4-4-4) F, W, S. Panorama of Jewish history highlighting great events, ideas, leaders, and interaction with other cultures. Sponsored by the Jewish Chautauqua Society in honor of Rabbi Edgar I. Magnin.

Courses in Classics

Lower-Division

Classics 5 Building English Vocabulary through Greek and Latin Roots (4) F, W, S. Formation and use of English words from Greek and Latin derivatives. Particularly useful for first-year students who wish to augment their vocabulary systematically.

Classics 10 Scientific and Specialized Terminology (4) F, W, S. 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.

Classics 35A, B, C The Formation of Ancient Society (4-4-4) F, W, S. A unified view of the cultures of the Mediterranean world in antiquity. Focuses on major institutions and cultural phenomena as seen through the study of ancient literature, history, archaeology, and religion. Same as History 35A, B, C.

35A Origins of Ancient Society (IV)

35B Classical Greece (IV)

35C Ancient Rome (IV)

Classics 50A, B, C Classical Literature (4-4-4) F, W, S. A survey of Greek and Latin literature with attention to relations with social developments.

50A Greek and Roman Epic (IV)

50B Greek and Roman Drama (IV)

50C Greek and Roman Historians (IV)

Classics 99 Special Studies in Classics (4-4-4) F, W, S. Consultation with instructor necessary prior to enrollment.

Upper-Division

Classics 111 The Thesaurus Linguae Graecae (4). Exposes undergraduate students to the history, objectives, and activities of UCI's Thesaurus Linguae Graecae Project, and to provide 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.

Classics 139 Writing in Classics (4). A course requiring at least 4,000 words of assigned composition based upon Greek and Latin texts in English translation, as well as upon pertinent secondary materials. Topics vary. Classics or Classical Civilization majors will be given admission priority. Prerequisites: satisfaction of lower-division writing requirement; junior standing or consent of instructor.

Classics 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.

Classics 145 Introduction to Classical Archaeology (4). Range and variety of materials used as evidence for reconstruction or recovery of the Greek and Roman civilizations and methods by which information is inferred from artifacts. Emphasis on particular facets of daily life.

Classics 150 Classical Mythology (4). Selected myths and legends as used in classical literature, and their modern interpretations.

Classics 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.

Classics 160 Topics in Classical Literature in English Translation (4). Subject matter variable. May be repeated for credit provided topic varies.

Classics 165 New Testament Literature (4). Analysis of texts and their literary, historical, and religious contexts.

Classics 169 Ancient Literary Criticism (4). Study in English translation of the major literary critics in classical antiquity including Plato, Aristotle, Horace, "Longinus," and Quintilian. Designed particularly for students majoring in Comparative Literature, English, Classics, and the various languages.

Classics 170 Topics in Classical Civilization (4). Subject matter variable. May be repeated for credit provided topic varies. Same as Humanities CLA170.

Classics 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.

Classics 199 Independent Studies in Classics (4-4-4) F, W, S. Consultation with instructor necessary prior to registration.

Graduate

Classics 210A Proseminar (4) F. Introduction to tools and methods in various fields of classical studies, including textual criticism, literary criticism, epigraphy, papyrology, and semantics.

Classics 210B History of Greek Literature (4) W. An introductory overview of the history of Greek literature in its social and historical context.

Classics 210C History of Latin Literature (4) S. An introductory overview of the history of Latin literature in its social and historical context.

Classics 220 Classics Graduate Seminar (4-4-4) F, W, S. Subject matter variable; mainly but not exclusively major literary topics.

Classics 230 Directed Reading (4-4-4) F, W, S. Texts from the reading list; several topics each year.

Classics 240 Greek and Latin Language (4-4-4) F, W, S. Prose composition, translation, and language studies.

Classics 280 Independent Study (4). Supervised independent research. Subject varies.

Classics 290 Research in Classics (4-4-4) F, W, S

Classics 299 Dissertation Research (4 to 12) F, W, S. May be repeated for credit. Satisfactory/Unsatisfactory Only.

Classics 399 University Teaching (4-4-4) F, W, S. Required of and limited to Teaching Assistants.

Department of East Asian Languages and Literatures

340 Humanities Hall; (714) 725-2227

Pauline R. Yu, **Department Chair**

Faculty

Steven D. Carter, Ph.D. University of California, Berkeley, *Professor of East Asian Languages and Literatures* (medieval Japanese poetry and intellectual history)

Martin Weizong Huang, M.A. Washington University, *Acting Assistant Professor of East Asian Languages and Literatures* (traditional Chinese fiction and intellectual history, literary theory)

Theodore Hutters, Ph.D. Stanford University, *Professor of East Asian Languages and Literatures* (modern Chinese literature and literary history)

Pauline R. Yu, Ph.D. Stanford University, *Department Chair and Professor of East Asian Languages and Literatures* (classical Chinese poetry and poetics, comparative literature)

The curriculum in East Asian Languages and Literatures enables students to understand the extensive and rich literary, historical, social, and aesthetic traditions of East Asia through the intensive study of Chinese or Japanese and of literary texts in translation and in the original language. Students take a total of four years of either Chinese or Japanese language courses, in which comprehension, speaking, reading, and writing are stressed. Literary studies occur throughout the curriculum: the first three years students read literature in translation and the fourth year they read in Japanese or Chinese.

The literature-in-translation courses consist of general introductory overviews as well as more specific topics at the intermediate level for those students whose language proficiency is insufficient to cope with difficult literary texts. At the advanced level, course content focuses on reading texts in the original language and rotates among significant literary and cultural topics. In these courses, the curriculum integrates the study of East Asian literatures with theoretical issues that shape the study of world literature in general. In this way, the student gains the dual perspectives of studying East Asian cultures on their own terms as well as recognizing the affinities these civilizations share with the emerging world culture.

The Department offers two undergraduate majors: the B.A. degree program in Chinese Language and Literature and the B.A. degree program in Japanese Language and Literature. In addition, the Department offers minors in these areas of study.

Careers for the Major

Studies in Chinese or Japanese will give the student the intensive linguistic and cultural 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 and literature offered by the departmental faculty will serve the student well in a variety of endeavors, such as international business, law, government service, journalism, teaching, and other careers involved with public affairs. Undergraduate studies in Chinese or Japanese are also an indispensable prerequisite for those students intent upon pursuing graduate study in any field of East Asian language or culture.

The Career Planning and Placement Center provides services to UCI 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 Planning and Placement Center section for additional information.

Planning a Program of Study

The student and the faculty adviser (assigned upon entering the major) 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 are placed in Chinese and Japanese courses according to their years of previous study. In general, one year of high school Chinese or Japanese taken in the United States is equated with one quarter of UCI work. Thus students with one, two, three, and four years of high school work will most often enroll in Chinese or Japanese 1B, 1C, 2A, and 2B, respectively. Students with background in an Asian language gained through primary or secondary school work taken in Asia must consult with the faculty to determine their proper placement level. Those who have gained substantial knowledge of Chinese or Japanese either through secondary school work or through college-level language courses may not repeat those courses for credit. Prospective majors who place out of the upper-division language requirement are expected to substitute an equivalent number of other upper-division Chinese or Japanese courses.

The faculty encourages students to study in China or Japan, either through the University's Education Abroad Program or independently, after completing at least two years of study (or its equivalent) of the relevant language at UCI. Additional information is available in the Department office.

Requirements for the Bachelor's Degree

University Requirements: See pages 50–53.

School Requirements: See page 148.

Departmental Requirements for the Majors

Two separate majors: Chinese Language and Literature and Japanese Language and Literature.

Chinese Language and Literature: Completion of Chinese 2C or equivalent; Chinese 3A-B-C, 100A-B-C, 101A-B-C; East Asian Languages and Literatures 50A, 50B, 50C; 110 or 150; and at least two additional upper-division courses in Chinese history, literature, art history, linguistics, or comparative literature.

Japanese Language and Literature: Completion of Japanese 2C or equivalent; Japanese 3A-B-C, 100A-B, 101A-B-C; East Asian Languages and Literatures 60A, 60B, 60C; 120 or 150; and at least three additional upper-division courses in Japanese history, literature, art history, linguistics, or comparative literature.

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

Two separate minors: Chinese Language and Literature and Japanese Language and Literature.

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.

Residence Requirements for the Minors: A minimum of four upper-division courses required for the minor must be successfully completed at UCI.

Courses in Chinese

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.

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: Chinese 1C or equivalent. (V)

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. (VII-B)

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 2C or equivalent. (VII-B)

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. (VII-B)

198 Topics in Chinese Literature (4). Special topics through directed reading in Chinese. Paper required. Prerequisite: consent of instructor. May be taken for credit three times as topic varies. (VII-B)

199 Independent Study (4). Investigation of special topics through directed reading in Chinese. Paper required. Prerequisite: consent of instructor. May be taken for credit three times as topic varies.

Courses in Japanese

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.

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: Japanese 2C or equivalent. (V)

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: Japanese 2C or equivalent. (VII-B)

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: Japanese 3C or equivalent. (VII-B)

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 specific literary texts. Prerequisite: Japanese 3C or equivalent. (VII-B)

198 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. (VII-B)

199 Independent Study (4). Investigation of special topics through directed reading in Japanese. Paper required. May be repeated for credit provided topic varies. Prerequisite: consent of instructor.

Courses in East Asian Languages and Literatures

50 Introduction to Chinese Literature and Culture. An overview of the major themes and assumptions of Chinese culture. Readings and discussions in English.

50A Early China (4) F. Introduction to selected literary, philosophical, and historical works of the early Chinese cultural tradition. (IV, VII-B)

50B Imperial China (4) W. The world of late imperial China (late sixteenth through late eighteenth century) through the prism of the traditional vernacular novel and short story. (IV, VII-B)

50C Modern China (4) S. Examination of the world of modern Chinese culture through close analysis of representative stories and works of criticism produced after 1918. Focus on the position of literature in society. (IV, VII-B)

60 Introduction to Japanese Literature and Culture. Survey of the major genres of traditional and modern Japanese literature in their cultural contexts. Readings and discussions in English.

60A Traditional Japanese Narrative in Translation (4) F. Readings in selected works of fictional and nonfictional prose of the premodern period. (IV, VII-B)

60B Japanese Poetry and Drama in Translation (4) W. Introduction to the major forms and conventions of poetry and drama in premodern Japan. (IV, VII-B)

60C Modern Japanese Literature in Translation (4) S. Readings and critical analysis of selected works, primarily fiction, of twentieth-century writers. (IV, VII-B)

110 Topics in Chinese Literature and Society (4). Studies in specific Chinese authors in their social and cultural context. Conducted in English. Prerequisites: East Asian Languages and Literatures 50A, 50B, 50C or consent of instructor. May be taken for credit three times as topic varies. Same as Humanities 170EC when content is appropriate. (VII-B)

113 Linguistic Structure of Chinese (4). Introduction to the phonology and major syntactic patterns of Mandarin Chinese. Prerequisites: Chinese 2C, or Linguistics 110 or 120, or consent of instructor. Same as Linguistics 165A.

120 Topics in Japanese Literature and Society (4) F. Studies in specific Japanese authors in their social and cultural context. Conducted in English. Prerequisites: East Asian Languages and Literatures 60A, 60B, 60C or consent of instructor. May be taken for credit three times as topic varies. Same as Humanities 170EJ when content is appropriate. (VII-B)

123 Linguistic Structure of Japanese (4). Detailed analysis of essential grammatical aspects of Japanese. Comparison with aspects of English grammar. Course not designed to teach Japanese per se, but to study the grammatical characteristics of Japanese from the perspective of theoretical linguistics. Prerequisite: Linguistics 120 or consent of instructor. Same as Linguistics 165B.

150 Topics in East Asian Literature in Translation (4). East Asian literary works in translation. Taught in English. Prerequisite: at least one other East Asian literature course or consent of instructor. May be taken for credit three times as topic varies. Same as Comparative Literature 103 when topic is appropriate. (VII-B)

198 Topics in East Asian Literature (4). Special topics through directed readings in English. Paper required. Prerequisite: consent of instructor. May be taken for credit three times as topic varies. (VII-B)

199 Independent Study (4). Investigation of special topics through directed reading in translation. Paper required. Prerequisite: consent of instructor. May be taken for credit three times as topic varies.

Department of English and Comparative Literature

200 Humanities Office Building; (714) 856-6712

Michael P. Clark, **Department Chair**

Faculty

Hazard S. Adams, Ph.D. University of Washington, *Professor of English* (Romanticism, Anglo-Irish literature, critical theory)

Stephen A. Barney, Ph.D. Harvard University, *Professor of English* (medieval literature and culture, allegory)

Lindon W. Barrett, Ph.D. University of Pennsylvania, *Assistant Professor of English* (critical theory, African-American cultural studies)

Homer Obed Brown, Ph.D. The Johns Hopkins University, *Professor of English* (eighteenth-century, novel, theory, Romanticism)

James L. Calderwood, Ph.D. University of Washington, *Professor of English and Associate Dean of Humanities Graduate Study* (drama, Shakespeare)

Michael P. Clark, Ph.D. University of California, Irvine, *Department Chair and Professor of English* (Colonial American literature, critical theory)

Stuart K. Culver, Ph.D. University of California, Berkeley, *Assistant Professor of English* (nineteenth-century American literature)

Jacques Derrida, Doctorat d'Etat es Lettres, Sorbonne, *Professor of Comparative Literature and French*

Robert Folkenflik, Ph.D. Cornell University, *Professor of English* (eighteenth-century, novel, biography, and autobiography)

Alexander Gelley, Ph.D. Yale University, *Professor of Comparative Literature* (eighteenth- and nineteenth-century European novel, critical theory, comparative literature)

Linda Georgianna, Ph.D. Columbia University, *Associate Professor of English and Associate Dean of Humanities, Undergraduate Studies* (medieval literature and culture)

Oakley Hall, M.F.A. University of Iowa, *Professor Emeritus of English* (fiction writing, contemporary fiction)

Carl Hartman, M.F.A. University of Iowa, *Senior Lecturer Emeritus in English* (fiction writing)

Donald Heiney, Ph.D. University of Southern California, *Professor of Comparative Literature* (fiction writing, theory and criticism of fiction)

John Hollowell, Ph.D. University of Michigan, *Senior Lecturer in English and Writing Director* (rhetorical theory, teaching of composition, American literature)

Renée Riese Hubert, Ph.D. Columbia University, *Professor Emerita of Comparative Literature and French* (literature and fine arts, modern poetry, surrealism, Romanticism, comparative literature)

Wolfgang Iser, Ph.D. University of Heidelberg, *Professor of English* (eighteenth-century English literature, modern novel, critical theory)

Murray Krieger, Ph.D. Ohio State University, *University Professor of English* (critical theory, Renaissance lyric, eighteenth-century figures)

Julia Reinhard Lupton, Ph.D. Yale University, *Assistant Professor of Comparative Literature* (Renaissance literature, literature and psychology)

Juliet Flower MacCannell, Ph.D. Cornell University, *Professor of Comparative Literature* (eighteenth-century French literature, modern semiotics, comparative literature)

Lillian Manzor-Coats, Ph.D. University of Southern California, *Assistant Professor of Comparative Literature* (Latin-American literature, literature and art)

James McMichael, Ph.D. Stanford University, *Professor of English and Director of the Writing Program* (contemporary poetry, poetry writing, prosody, Joyce)

J. Hillis Miller, Ph.D. Harvard University, *UCI Distinguished Professor of English and Comparative Literature* (Victorian literature, critical theory)

Robert L. Montgomery, Ph.D. Harvard University, *Professor of English* (Renaissance literature, critical theory, comparative literature)

Jane O. Newman, Ph.D. Princeton University, *Associate Professor of Comparative Literature* (sixteenth- and seventeenth-century German literature, contemporary theory and criticism, feminism)

Robert Newsom, Ph.D. Columbia University, *Professor of English* (Victorian literature, theory of fictions)

Margot Norris, Ph.D. State University of New York, Buffalo, *Professor of English and Comparative Literature* (modern British literature)

- Robert L. Peters, Ph.D. University of Wisconsin, *Professor of English* (Victorian literature, contemporary poetry)
- Barbara L. Reed, Ph.D. Indiana University, *Senior Lecturer in English* (American literature, children's literature)
- Mark Rose, Ph.D. Harvard University, *Director of the University of California Humanities Research Institute and Professor of English* (Renaissance literature, Shakespeare, critical theory)
- John Carlos Rowe, Ph.D. State University of New York, Buffalo, *Professor of English* (American literature, modern literature, critical theory, comparative 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 of English* (medieval and Renaissance literature)
- Gabriele Schwab, Ph.D. University of Konstanz, *Professor of English and Comparative Literature* (modern literature, critical theory, psychoanalysis, comparative literature)
- Martin Schwab, Ph.D. University of Bielefeld, *Assistant Professor of Comparative Literature and Philosophy* (philosophy, aesthetics, comparative literature)
- Myron Simon, Ed.D. University of Michigan, *Professor of English and Education* (American and Canadian literature, early twentieth-century English poetry, ethnic literature, rhetoric)
- Barbara Spackman, Ph.D. Yale University, *Associate Professor of Comparative Literature and Italian* (Italian literature)
- Brook Thomas, Ph.D. University of California, Santa Barbara, *Professor of English* (American literature, literature and law)
- Harold Toliver, Ph.D. University of Washington, *Professor of English* (Renaissance and seventeenth-century literature, theory of genre)
- Andrzej Warminski, Ph.D. Yale University, *Associate Professor of Comparative Literature and Director of the Comparative Literature Program* (Romanicism, critical theory)
- Albert O. Wlecke, Ph.D. Michigan State University, *Associate Professor of English* (English and American Romanticism, teaching of composition)

The Department of English and Comparative Literature is concerned with the nature and value of literature, possible approaches to literary works, and the relation of literary criticism to the intellectual issues of the day. Fundamentally it is concerned with the humanistic problem of value. Thus its main literary concern is critical and theoretical. Though not alone in the task, the Department recognizes a continuing obligation to help all students write the English language with clarity and grace.

Students are given the opportunity to participate in departmental affairs through two elected student committees, one of undergraduates, one of graduates. The committees meet periodically with faculty committees of the Department, and the recommendations of student committees become matters of record which accompany any recommendations emanating from the Department. Each quarter all students taking classes within the Department have the opportunity to evaluate the particular course and teacher.

Careers for the English or Comparative Literature Major

The study of literature helps students to 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. An undergraduate major in either English or Comparative Literature is also an especially good preparation for graduate study.

Department advisors encourage their students to investigate various careers—especially those outside the traditional fields for such majors (e.g., graduate study and law)—before these students have completed their undergraduate educations.

The Career Planning and Placement Center provides services to UCI 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 Planning and Placement Center section for additional information.

Undergraduate Program

The Department offers to the undergraduate three areas of study:

The Program in Literary Criticism, which emphasizes a variety of critical approaches in the reading and criticism of English, American, and comparative literature.

The Program in Writing, which offers an emphasis in the writing of poetry or fiction. Undergraduate courses in journalism and nonfiction are also available, including formal instruction and workshop experience for staff members of the campus newspaper. The aim of the program is to encourage the creative powers of students while introducing them to the discipline of reading and practical criticism, often in workshop situations. Under certain circumstances, creative writing courses may satisfy part of the writing requirement portion of the UCI breadth requirement (Category I).

The Program in Comparative Literature, which though administratively a part of the Department, is basically interdisciplinary in its orientation, drawing on faculty and other resources from the fields of the various modern and classical literatures and drama. The consciousness of the modern educated person is the product of centuries of cultural heritage, including not only works of literature in one's own language but world literature from Homer to Gide and Thomas Mann. At UCI, Comparative Literature is regarded as the study of literature from the international point of view rather than in a national framework. A student who completes a degree in Comparative Literature will be expected to have a grasp of the history of literature in its broad outlines and to be able to deal competently with literary texts, whatever their period or national origins. Comparative Literature is well-suited for students interested in a double major.

Since the Department believes that a student of literature should recognize the importance of understanding theoretical problems in literature, of developing a broad acquaintance with literary texts, and of experiencing the problems of literary creation at first hand, the Department invites students to take work in all three of its programs, with an emphasis in one of the first two (toward a Bachelor's degree in English) or a major in the third (toward a Bachelor's degree in Comparative Literature).

Many of the courses will vary in specific content from year to year, depending on the plans of individual teachers, since the Department recognizes that no course can treat all the major authors and works relevant to a given period or topic.

Requirements for the Bachelor's Degree

University Requirements: See page 50–53.

School Requirements: See page 148.

Departmental Requirements for the English Major

Two courses from the E 28A-B-C or CL 50A-B-C groups (including either E 28A or CL 50A) and a third course either from those two groups or from E 6, 7, 8 or CL 8; CR 100A; CR 100B and CL 100 (approved seminars from the course groups numbered in the 103s and 104s may be substituted for these courses); at least four courses from the E 101 group; at least five Department courses numbered above 101, excluding E 140, E 150, WR 139, or WR 179; competence in a foreign language, either classical or modern, equivalent to six quarters of work at UCI (in classical languages, 1A-B-C and Greek or Latin 100 three times, though Greek or Latin 25 may be substituted for one of the 100 courses), plus (in modern languages) one course in a

foreign literature in which texts are read in the original language. (Some languages, such as Chinese, Japanese, or Russian, may ordinarily require three years of language study as preparation for the study of literature; a student who lacks three years of study may occasionally arrange with the instructor of a literature-in-translation course to read selected texts in the original language.) Students selecting a writing emphasis have some flexibility in substituting writing workshops for period and genre courses; their total courses normally number more than the usual major.

Residence Requirement for the English Major: CR 100A, CR 100B, and three E 101s must be completed successfully at UCI.

Departmental Requirements for the English Minor

Three courses selected from E 28A-B-C, CL 50A-B-C, or E 6, 7, 8 sequences, including at least one quarter of E 28; and at least five English or writing courses numbered 101 or higher, although two courses from the following may be substituted: CR 100A, CR 100B, WR 100B, CL 100, CL 104.

Residence Requirement for the English Minor: Four upper-division courses must be successfully completed at UCI.

Departmental Requirements for the Comparative Literature Major

Sufficient competence in a foreign language, either modern or classical, to be able to read any standard literary or critical text in that language. If the student intends to continue with graduate work, the study of a second foreign language is highly recommended before graduation.

Three quarters of lower-division work: Comparative Literature majors are normally required to take CL 50A-B-C. Transfer students may be required to take one or more courses in the sequence depending on the courses they have taken previously.

Normally 10 upper-division courses in addition: usually these will include CR 100A, CL 100 twice, two courses (one 101 and one above 101) in a selected foreign language, or two 101s in two different foreign languages, or two years of a classical language; two courses from CL 103 or CL 104; three additional upper-division courses chosen from the offerings in comparative literature, English, literary criticism, and creative writing. Courses in allied areas, e.g., history, philosophy, social science, may be counted toward the major if they deal with literary or philosophical texts, though prior approval of a faculty advisor is necessary.

Residence Requirement for the Comparative Literature Major: CR 100A and four upper-division English or Comparative Literature courses must be completed successfully at UCI.

Departmental Requirements for the Comparative Literature Minor

CL 50A-B-C, CR 100A, CL 100, CL 103 or 104 (three courses), and one upper-division literature course taught in a foreign language.

Residence Requirements for the Comparative Literature Minor: Four upper-division courses must be successfully completed at UCI.

Planning a Program of Study

Students should plan, with their faculty advisors, coherent programs of study, including undergraduate seminars, workshops in writing (for students choosing a 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 Comparative Literature major as preprofessional training in government, law, medicine, etc. Students who wish advice in planning such programs should consult both the Department and people in their prospective professional areas.

Students who intend to pursue a single subject or multiple subject teaching credential must consult with Professor Myron Simon (as well as with the Office of Teacher Education) to ensure that they understand the departmental and State requirements.

A student who intends to continue with graduate work is urged to study a second foreign language before graduation.

Graduate Program

The Department's three principal areas of work on the undergraduate level—English and American Literature, Comparative Literature, and the English major with writing emphasis—are reflected in the graduate programs: the M.A. and Ph.D. in English, the M.A. and Ph.D. in Comparative Literature, and the M.F.A. in English (Creative Writing). A student's courses for the M.A. and Ph.D. in English may include or emphasize work in American literature as well; and 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 or in Comparative Literature may stress in their qualifying examinations and dissertations. Ordinarily students are not admitted to the English or Comparative Literature programs 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. A committee of the Department, with the consent of the Dean of Graduate Studies, admits students to these programs. Each program has a director appointed by the Department Chair. A deliberate effort is made to maintain close administrative and intellectual ties among the programs.

Specific requirements for the graduate degrees will be reached by consultation between members of the faculty and the candidate. The first-year graduate student or the candidate for the Master of Fine Arts in English (Creative Writing) plans 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 encouraged to study philosophy, history, foreign languages and literatures, and the fine arts.

Applicants for graduate degrees in English and Comparative Literature must submit scores for the Graduate Record Examination (GRE) including the Subject Literature in English Test; applicants must also submit sample papers and a statement about competence in foreign languages.

Only in exceptional circumstances will students be permitted to undertake programs of less than six full courses during the academic year. The normal expectation, however, is enrollment in three courses each quarter, except for Teaching Assistants, who 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. Dissertations can frequently be written in a year. The Ph.D. in English or the Ph.D. in Comparative Literature normally should be completed in six years or less.

The Department recognizes that many of its graduate students intend to become teachers, and it believes that graduate departments should be training college teachers as well as scholars—indeed, that teaching and most literary scholarship complement one another. Thus the Department has initiated a program by which all its Ph.D. candidates, in English as well as in Comparative Literature, may gain supervised training as part of the formal seminar work required for the degree. M.F.A. candidates also have the opportunity to participate in this program. Candidates for the Ph.D. are expected to acquire experience in teaching.

All those interested in graduate study in the Department should obtain the brochure on graduate programs from the departmental office.

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 and Comparative Literature sponsors a Summer M.A. Program designed for teachers. 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 creative writing.

The M.F.A. degree is normally conferred upon the completion of a two- to 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 pass an examination on a reading list of literary works in the genre selected, and to present as a thesis an acceptable book-length manuscript of poetry or short stories, or a novel.

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. (two courses of which may be in the graduate teaching program); proficiency in the reading of two acceptable foreign languages, modern or classical; the dissertation; and satisfactory performance on designated examinations.

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 well before the general examination.

Students admitted at the post-M.A. level must provide evidence of satisfactory competence in foreign languages. Competence in one of the two languages required for the Ph.D. is verified through a course in theory and practice of translation; the other language may be verified through examination.

Upon completion of course work the student takes general examinations on literary theory and criticism; some particular literary form, genre, style, theme, or structure; a historical period; a group of authors; and a specific topic. The first four of these examinations are written; the fifth is oral. The student has the opportunity to present personal choices for the examination, but the choices must enable an individual to demonstrate breadth of knowledge as well as literary understanding and therefore must be approved by the advisory committee.

Upon satisfactorily completing the general examination and the oral Qualifying Examination, the student is admitted to candidacy

for the degree. As soon after completion of the general examination as is practical, the student presents an essay leading to dissertation 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.

Comparative Literature

There are at least four avenues by which the student may approach graduate work in Comparative Literature:

1. An undergraduate major in Comparative Literature equivalent to the one described above;
2. An English major, provided that a sufficient background in at least one foreign language is demonstrated (a beginning on a second foreign language is desirable);
3. A normal major in drama, with same proviso as above;
4. A normal major in a foreign language, provided that a sufficient general background in world literature is demonstrated.

Make-up work will be required before graduate studies can begin if one of these avenues has not been taken.

At the graduate level, the study of Comparative Literature becomes more specialized, with the student engaged in a particular area of research and concerned with such problems as the development of genres, interrelations between literatures, the theory and practice of translation, and other literary questions transcending national boundaries.

For the graduate student in Comparative Literature a professional competence in foreign languages is essential. French and German are usually required for all doctoral candidates, since these languages along with English are the accepted tools of international literary scholarship. A classical language may prove indispensable for work in many traditional fields of literary study, and the scholar's own specialty may require the mastery of other languages. The underlying assumption of language requirements is that, after the tool languages have been mastered, the professional scholar's own interests should determine the specific kinds and degrees of language skill to be acquired.

At the graduate level, the nucleus of the foreign language requirement is the course CL 220 (Problems in Translation) in which, after a suitable theoretical preparation, the student plans and carries out a high-quality translation of a literary text. The translation, along with an introduction or other scholarly apparatus explaining and defending the technical decisions involved in the task, is then submitted as a paper for course credit.

Master of Arts in Comparative Literature

Students entering the Master of Arts program should complete their course work in three quarters. This course work should include CL 220 (Problems in Translation) with a project in either French or German and appropriate graduate-level work in English, foreign languages, drama, comparative literature, and other areas as recommended by the advisor. Soon after beginning graduate work the student, with the advice and approval of the assigned advisor, will decide on a field of specialty, which will be emphasized in progressing toward the M.A. degree. (Normally this choice will be a preliminary step toward the selection of an area of specialty for the Ph.D.)

Graduate study in Comparative Literature requires an exceptional facility in foreign languages, and the student should not attempt a Master's degree without a thorough knowledge of one foreign language and literature and a considerable knowledge of a second language. Normally the greatest part of the student's work will involve the study of literary texts in the original languages.

At the end of course work, normally about nine courses at the graduate level, the student will be examined on a reading list in world literature that the student's committee has approved. This list should be designed by the student in consultation with the committee and based on the general World Literature list for Comparative Literature. The student's own list should follow some organizing principle, such as an emphasis on the fields and languages of the student's specialization. Nevertheless, every list should include works from all of the different groups represented on the general World Literature list. The M.A. examination is a three-hour written examination, which focuses on essay questions based on the student's approved reading list. Exceptional students may be exempted from taking the examination by petitioning the Graduate Committee, which will review the student's performance and qualifications in arriving at its decision.

Doctor of Philosophy in Comparative Literature

The doctoral program is designed to prepare the student for a professional career as a scholar and critic of literature. Details of the doctoral program in Comparative Literature may be obtained from the Director of the Program in Comparative Literature. Normally the degree requires two years of course work (usually a minimum of three courses per quarter). Of these courses, the only required course is CL 220 (Problems in Translation), which is taken twice, with projects in acceptable languages. The rest of the student's work will be in seminars or other graduate-level courses in Comparative Literature, English, the various foreign language departments, or drama.

In general an exceptional command of foreign languages is required, normally involving a professional competence in two or more foreign languages, either modern or classical. The doctoral student is encouraged to design and carry out a personal plan of study (the area of specialty) in a particular field of interest. The requirements for the doctorate also include an area of competence in literary theory and practical criticism; a student may also stress theory in preparation for the Qualifying Examination.

Upon completion of the course work, the student will be examined in the following areas of knowledge: (1) mastery of a limited topic in literary theory or history of criticism, along with general knowledge of major critical texts in the history of literature; (2) an area of specialty as described above; and (3) major works and authors appropriate to the study of comparative literature. Following this examination, and upon recommendation of a candidacy committee appointed by the Graduate Dean on behalf of the Graduate Council, the student is formally admitted to candidacy.

The study toward the degree of Doctor of Philosophy will culminate in the writing of a suitable dissertation, normally on a comparative subject, although subjects lying within a single literature or dealing with general literary and aesthetic problems not confined to any specific literatures may also be acceptable. Studies of the relation between literature and the other arts are also encouraged.

Courses in English and Comparative Literature

Lower-Division

Satisfaction of the Subject A requirement is a prerequisite for all departmental courses except E 6, E 7, E 8, and CL 8. See the Requirements for a Bachelor's Degree section for information on fulfilling the Subject A requirement.

Descriptions of the topics to be offered in the undergraduate literary courses during a given year are available in the departmental office in the fall.

E 6 Major British Writers: Chaucer to Pope (4) F, Summer. Lecture, three hours. Reading of major works by such figures as Chaucer, Shakespeare, Milton, Swift, Pope, and others. Primarily designed for nonmajors. (IV)

E 7 Major British Writers: Wordsworth to Joyce (4) W, Summer. Lecture, three hours. Reading of major works by such figures as Wordsworth, Keats, the Brontës, Dickens, Arnold, Joyce, and others. Primarily designed for nonmajors. (IV)

E 8 Major American Writers (4) S, Summer. Lecture, three hours. Reading of major works by such figures as Emerson, Hawthorne, Melville, Whitman, Twain, James, Eliot, Faulkner, and others. Primarily designed for nonmajors. (IV)

CL 8 Major European Authors (4) W. Comparative study of two or more European writers related by genre, style, etc., for instance, Balzac and Dickens, Kafka and Beckett. May be substituted for one quarter of the E 6, 7, 8 series.

CL 9 Introduction to Multicultural Topics in Literature (4) F, W, S. Introduction to multicultural literature including African-American, Asian-American, Chicano/Latino, and Native American. May be repeated for credit as topics vary. (VII-A)

E 28A-B-C The Nature of Literature (4-4-4) F, W, S. Discussion, three hours. **28A:** The Poetic Imagination; **28B:** Comic and Tragic Vision; **28C:** Realism and Romance. Reading of selected texts to explore the ways in which these modes formulate experience. Students write several short papers in each course. Prerequisite: satisfaction of the lower-division writing requirement. (IV)

WR 30 The Art of Writing: Poetry (4) F, W, S, Summer. 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)

WR 31 The Art of Writing: Prose Fiction (4) F, W, S, Summer. Beginners' workshop in fiction writing, evaluation of student manuscripts, and parallel readings. May be repeated once for credit with a different instructor. (I)

WR 32 The Art of Writing: Drama (4). Beginners' workshop in play-writing, evaluation of student manuscripts, and parallel readings. Same as Drama 32. (I)

WR 38 The Art of Writing: Nonfiction and Journalism (4) F, W, Summer. Beginners' workshop in the writing of nonfiction and news articles, evaluation of student manuscripts, projects. (I)

WR 39A Fundamentals of Composition (0-2) F, W, S, Summer. Discussion, three hours. Deals with the fundamentals of grammar, usage, paragraph development, principles of rhetoric, and the writing of expository essays. Some exercises; frequent papers. A student seeking to satisfy the Subject A requirement who receives a grade below C must repeat the course, normally in the next quarter of residency. A student who satisfies the Subject A requirement during WR 39A and achieves a grade of C or above in WR 39A will earn four units of workload credit, two units of which count toward baccalaureate credit. Students held for Subject A must satisfy the requirement within the first three quarters of residency.

WR 39B Expository Writing (4) F, W, S, Summer. Discussion, three hours. Guided practice in the writing of expository prose. Readings selected from current fiction and nonfiction; writing topics require analysis of the readings and demonstration of rhetorical principles. Prerequisite: English and Comparative Literature WR 39A or the equivalent. (I)

WR 39C Argument and Research (4) F, W, S, Summer. Discussion, three hours. 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: English and Comparative Literature WR 39B. (I)

CL 40A-B-C Development of Drama (4-4-4) F, W, S. Same as Drama 40A-B-C. (IV)

CL 50A-B-C The Literary Tradition (4-4-4) F, W, S. The reading of selected major works in the Western literary tradition. Required of Comparative Literature majors. (IV)

Upper-Division

CL 100 Undergraduate Seminar in Literary Theory and Practice (4) F, W, S. Seminar, three hours. Open to upper-division majors in English and Comparative Literature only, and required of them. Sections limited to 15 students. Each instructor announces a topic that joins theoretical considerations of comparative literary study with the practical criticism of individual literary texts. May be repeated as the topics change. Prerequisite: a lower-division series in literature.

CR 100A Literary Theory and Criticism (4) F. Required of beginning majors in English and Comparative Literature. A series of lectures and discussions devoted to the theoretical dimensions of literary criticism as reflected in major theorists from Plato to the present. Prerequisite: a lower-division series in literature.

CR 100B Undergraduate Seminar in Literary Theory (4) W, S. Seminar, three hours. Open to upper-division majors in English and Comparative Literature only, and required of them soon after the completion of CR 100A. Sections limited to 15 students. Each instructor announces a theoretical topic deriving from CR 100A and explores it through a number of theoretical and literary texts. May be repeated as the topics change. May be cross-listed with CR 139 when the topic is appropriate. Prerequisite: English and Comparative Literature CR 100A.

CR 100C Contemporary Critical Theory (4) W, S. Lecture, three hours. Discussion of contemporary critical theory. Enrollment limited to 25 students. Prerequisite: English and Comparative Literature CR 100A.

WR 100B Undergraduate Seminar in Literary Theory (4). Seminar, three hours. Substitute for CR 100B for writing emphasis students. Prerequisite: English and Comparative Literature CR 100A.

E 101 English and American Literary History (4) F, W, S, Summer. English majors are required to take four different E 101 courses. Topics are announced by instructors, but the E 101 curriculum is offered in such a way as to cover the following periods in any two-year academic cycle: Medieval, Renaissance (through 1660), Restoration and eighteenth century, Romanticism and Victorian, nineteenth-century American, Anglo-American Modernism. Required of English majors with junior or senior standing. May be repeated as topics vary.

E 103 Undergraduate Lectures in English Literature (4) F, W, S, Summer. Three hours. May be taken more than once provided the topic changes. A series of lectures on and discussions of announced topics in literary criticism, history, genres, modes, major authors. Prerequisite: none for most topics; check descriptions of individual course topics.

CL 103 Undergraduate Lectures in Comparative Literature (4) F, W, S, Summer. Three hours. May be taken more than once provided the topic changes. A series of lectures on and discussions of announced comparative topics in literary criticism, history, genres, modes, major authors. Prerequisites: none for most topics; check descriptions of individual course topics. Same as Humanities 170CB. Same as East Asian Languages and Literatures 150 when topic is appropriate.

CL 104 The Interdisciplinary Course (4) F, W, S. Lecture and discussion course open to all students, three hours. May be taken more than once provided the topic changes. Treats interdisciplinary topics of various kinds (e.g., literature and politics, literature and religion, literature and science, literature and other arts). Prerequisites: none for most topics; check descriptions of individual course topics. Same as Humanities 170CD.

E 105 Multicultural Topics in American Literature (4) F, W, S. Treats the literature and culture of one or more minority groups in California and the United States, including African-Americans, Asian-Americans, Chicano/Latinos, and Native Americans, and explores the dynamics of these groups with each other and the majority culture. May be repeated for credit as topics vary. (VII-A)

CL 105 Multicultural Topics in Comparative Literature (4) F, W, S. Treats the literature and culture of one or more minority groups in California and the United States, including African-Americans, Asian-Americans, Chicano/Latinos, and Native Americans, in relation to other national literatures. May be repeated for credit as topics vary. (VII-A)

WR 109 Nonfiction and Journalism (4) S. Three hours. The course develops out of WR 38 for students with special competence for advanced work in journalism. Prerequisite: consent of instructor.

WR 110 Short Story Writing (4) F, W, S, Summer. 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.

WR 111 Poetry Writing (4) F, W, S, Summer. 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.

WR 112 Playwriting (4). Three-hour advanced playwriting workshop; discussion of student writing and of relevant literary texts. Prerequisite: consent of instructor. Same as Drama 132.

WR 113 Novel Writing (4) S. Three-hour advanced workshop in fiction writing; discussion of student writing and of relevant literary texts. Prerequisite: consent of instructor.

WR 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.

WR 139 Advanced Expository Writing (4) F, W, S, Summer. Discussion, three hours. Study of rhetorical techniques; practice in writing clear and effective prose. Several essays of varying lengths, totaling at least 4,000 words. Prerequisites: satisfaction of the lower-division writing requirement of the breadth requirement and junior standing. May *not* be counted toward the upper-division requirements for English or Comparative Literature majors. (I)

E 139E Critical Writing: Topics in English Literature (4) F, W, S, Summer. Discussion, three hours. Study and practice of critical writing on various topics in English literature. Four essays of varying lengths, totaling at least 4,000 words. Open to all juniors and seniors; priority given to English majors. Prerequisites: satisfaction of lower-division writing requirement; junior standing or consent of instructor.

E 139F Critical Writing and the Craft of Fiction (4) F, W, S, Summer. Study and practice of various fictional forms and the critical understanding of these forms. Critical essays and exercises in aspects of the craft of fiction, totaling at least 4,000 words. Priority given to writing-emphasis majors in English and Comparative Literature. Prerequisites: satisfaction of lower-division writing requirement; junior standing or consent of instructor.

E 139P Critical Writing and Poetic Practice (4) F, W, S, Summer. Study and practice of various poetic forms and the critical understanding of these forms. Critical essays and poetic exercises of varying lengths, totaling at least 4,000 words. Priority given to writing-emphasis majors in English and Comparative Literature. Prerequisites: satisfaction of lower-division writing requirement; junior standing or consent of instructor.

CL 139 Critical Writing: Topics in Comparative Literature (4) F, W, S, Summer. Study and practice of critical writing on various topics in comparative literature. Four essays of varying lengths, totaling at least 4,000 words. Open to all juniors and seniors; priority given to Comparative Literature majors. Prerequisites: satisfaction of lower-division writing requirement; junior standing or consent of instructor.

CR 139 Critical Writing: Topics in Literary Theory (4) W, S. Study and practice of critical writing on various topics in literary theory. Four essays of varying lengths, totaling at least 4,000 words. Restricted to English and Comparative Literature majors. May be cross-listed with CR 100B when the topic is appropriate. Prerequisites: satisfaction of lower-division writing requirement; junior standing or consent of instructor.

E 140 Children's Literature (4) F. Lecture course open to all students. Explores the nature of children's literature and the special critical problems raised by it. Primarily for nonmajors. May *not* be counted toward the upper-division requirements for English or Comparative Literature majors.

E 150 Topics in Literature for Nonmajors (4). Lecture, three hours. 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 as topics change. May *not* be counted toward the upper-division requirements for English or Comparative Literature majors.

WR 179 Advanced Composition for Teachers (4). Principles of formal composition and teaching composition. Selected handbooks and ancillary reading, marking papers, making assignments, and conducting workshops

and tutorials. May *not* be counted toward the upper-division requirements for English or Comparative Literature majors. Same as Education 179.

E 181 The Structure of English (4). An examination of American English phonology, morphology, and syntax. Intended primarily for prospective teachers of English in elementary and secondary schools and for teachers of English as a second language. Prerequisite: Linguistics 3. Same as Linguistics 163B.

E 184 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. Same as Linguistics 172.

E 187 Selected Topics in English Linguistics (4)

E 198 Special Topics (4-4-4). Directed group study of selected topics. By consent, by arrangement.

CL 198 Special Topics (4-4-4). Directed group study of selected topics. By consent, by arrangement.

E 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.

CL 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.

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 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 and Comparative Literature might find these Humanities courses of special interest:

- Humanities 200 (The Nature and Theory of History);
- Humanities 210 (Approaches to Linguistic Study);
- Humanities 230 (Philosophical Analysis); and
- Humanities 291 (Interdisciplinary Topics).

E 200 Selected Topics in English Linguistics (4)

CL 200 Methods of Comparative Literature (4) F. Introduction to comparative literary study required of first-year graduate students in Comparative Literature. Study of representative theories of the discipline.

E 210 Studies in Literary History (4) F, W, S

CL 210 Comparative Studies (4) F, W, S

CL 220 Problems in Translation (4) F, W, S

CR 220A-B-C Studies in Literary Theory and Its History (4-4-4) F, W, S. CR 220A same as Humanities 220.

E 225 Studies in Literary Genres (4) F, W, S

E 230 Studies in Major Writers (4) F, W, S

E 235 Methods of Literary Scholarship (4)

CR 240 Advanced Theory Seminar (4) F, W, S

WR 250A-B Graduate Writers' Workshop (Fiction) (4-4) F, W, S

WR 250C Graduate Writers' Workshop (Poetry) (8) F, W, S. Satisfactory/Unsatisfactory Only.

WR 251A-B Writing in Conference (Fiction) (4-4) F, W, S

WR 251C Writing in Conference (Poetry) (8) F, W, S. Satisfactory/Unsatisfactory Only.

E 290 Reading and Conference (4) F, W, S

CL 290 Reading and Conference (4) F, W, S

E 291 Guided Reading Course (4)

CL 291 Guided Reading Course (4)

E 299 Dissertation Research (4 to 12) F, W, S. Satisfactory/Unsatisfactory Only.

CL 299 Dissertation Research (4 to 12) F, W, S

E 398 Rhetoric/Teaching of Composition (2) F. 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.

E 399 University Teaching (4-4-4) F, W, S. Required of and limited to Teaching Assistants. Satisfactory/Unsatisfactory Only.

Program in Film Studies

123 Humanities Annex; (714) 856-5386

Eric Rentschler, **Program Director**

Faculty

Homer Obed Brown, Ph.D. The Johns Hopkins University, *Professor of English* (film theory, American film, popular culture)

David Carroll, Ph.D. The Johns Hopkins University, *Professor of French and Italian* (film history and criticism, French cinema, film and society)

Anne Friedberg, Ph.D. New York University, *Assistant Professor of Film Studies* (film history and theory, film and postmodernism, avant-garde and experimental film)

Renée Riese Hubert, Ph.D. Columbia University, *Professor Emerita of French and Comparative Literature* (surrealist film/fantastic film, early comedy)

Alejandro Morales, Ph.D. Rutgers University, *Professor of Spanish* (Latin American film)

Gonzalo Navajas, Ph.D. University of California, Los Angeles, *Professor of Spanish* (Spanish cinema)

Eric Rentschler, Ph.D. University of Washington, *Director of the Program and Professor of German* (German film, history, criticism, and theory)

John Carlos Rowe, Ph.D. State University of New York at Buffalo, *Professor of English* (film and documentary images of war, film theory)

Linda Williams, Ph.D. University of Colorado, *Professor of Film Studies* (film history, theory, and genre; women and film, feminist theory, mass culture)

The expressive media, film and television, significantly shape our access to the modern world. Film Studies seeks to comprehend the appeal, function, and changing character of these aural and visual forms, and to consider how they affect our understanding and experience.

The Program in Film Studies provides a systematic and comprehensive exposure to cinema, television, and modern media. The curriculum is composed of a coherent sequence of courses which span the film medium's connection to other art forms, its historical development, and its function as an institution and an industry. The Program familiarizes students with the history, theory, and aesthetics of cinema, a wide array of national cinemas, and individual filmmakers, period styles, and genres. Additional course work acquaints students with the practical and technical aspects of film production and scriptwriting. The curriculum is complemented by regular film series, visits from directors and scholars, and critical symposia.

The School of Humanities charges a laboratory fee of \$20 per course to all students taking Film Studies courses.

Film Studies students have the opportunity to spend their junior year in France studying at the Inter-University Center for Film and Critical Studies in Paris, through the University's Education

Abroad Program. Information is available both in the Film Studies Office and the Education Abroad Program Office.

Career Opportunities

In addition to providing students with a solid grounding in humanistic studies, a degree in Film Studies prepares students to seek a career as a film educator, to attend graduate school in film studies, to continue literary studies connected with film, and to work in the rapidly growing entertainment industry, in either its commercial or independent sectors.

The Career Planning and Placement Center provides services to UCI 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 Planning and Placement Center section for additional information.

Requirements for the Bachelor's Degree

University Requirements: See pages 50–53.

School Requirements: See page 148.

Program Requirements for the Major: Film Studies 50A, 101A-B-C, 102, 110A-B-C, 112, 113, 114, 115; and three courses (of varying topics) from Film Studies 160. Film Studies 198 may be substituted for one or two of the Film Studies 160 Courses.

Residence Requirement for the Major: At least five upper-division courses required for the major must be completed successfully at UCI.

Program Requirements for the Minor: Seven upper-division courses: Film Studies 101A-B-C, 112, 115, and two courses (of varying topics) from Film Studies 160.

Residence Requirement for the Minor: Four upper-division courses must be successfully completed at UCI.

Courses in Film Studies

Lower-Division

40 Film Art Symposium (4) S. Weekly guest film artists present their work. Discussion of formal, stylistic, and practical problems of commercial and independent production. Formerly Film Studies 50C. Not offered 1991-92.

50A Basic Film Production (4) F. Introduction to the basic film apparatus. The elementary essentials of production, including the use of camera and lenses, film stock, and lighting, as well as editing and sound.

50B Advanced Film Production (4) W. Students produce individual film projects, utilizing skills and insights introduced in Film Studies 50A. Prerequisite: Film Studies 50A.

Upper-Division

101A-B-C History of Film

101A The Silent Era (4) F. 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.

101B The Sound Era I (4) W. Continues the investigation of formal strategies and historical contexts pursued in Film Studies 101A. Concentration on a range of national cinemas prior to and after World War II, scrutinizing films by Renoir, Welles, Riefenstahl, Hawks, Kazan, Rossellini, and others. Prerequisite: Film Studies 101A or consent of instructor.

101C The Sound Era II (4) S. An investigation of a variety of changes in narrative structure and cinematic technique which has taken place in the last 25 years. Frames aesthetic questions in political, social, and economic terms. Films by Godard, Antonioni, Fellini,

Fassbinder, Wenders, Sembène, and others. Prerequisite: Film Studies 101B or consent of instructor.

102 History of Television (4) F, W, S. Development of television as a mass medium and a distinctive form of representation. Spans the history of the medium since the 1940s, concentrating on television as an expressive form and an institution, subject to a series of sociopolitical, aesthetic, and economic determinants.

110A-B-C Theory of Film

110A Classical Film Theory (4) F. Close readings in a seminar-style atmosphere of major texts by Arnheim, Balázs, Eisenstein, Bazin, Benjamin, Horkheimer/Adorno, Kracauer, and others. Same as Humanities 174B.

110B Contemporary Film Theory (4) W. Acquaints students with the central questions of contemporary film theory. Readings of key texts concerned with semiotic, post-structural, psychoanalytical, and feminist approaches to film studies. Prerequisite: Film Studies 110A or consent of instructor. Same as Humanities 174C.

110C Applied Film Theory (4) S. In-depth readings of studies devoted to single films and directors which reflect the interests of contemporary film theory. Prerequisite: Film Studies 110B or consent of instructor. Formerly Film Studies 111.

112 Studies in Film Genre (4) F, W, S. Theoretical discussion of what constitutes the patterns of recognition and serial productions we call "genre" films. Case studies of particular film genres, e.g., westerns, musicals, melodramas, and horror films. Prerequisite: Film Studies 101A-B-C or consent of instructor. Same as Humanities 174A.

113 Film, Literature, and Narrative (4) S. Concerned with the narrative cinema, i.e., film and how it functions as a storytelling medium. Deals with exchanges between film and literature, scrutinizing how the evolving nature of these relationships have conditioned the development of both cinematic and literary narrative. Prerequisite: Film Studies 101A-B-C or consent of instructor.

114 Film and the Other Arts (4) W. Reading of theoretical writings (psychological, aesthetic, semiotic, social) applicable to film and other visual arts, leading to a comparative study of image, space, and time. Texts of authors such as Benjamin, Arnheim, Kracauer, Artaud, Barthes, Gombrich, and Krauss are analyzed. Prerequisite: Film Studies 101A-B-C or consent of instructor. May be repeated for credit if topic varies.

115 Studies in Film Authorship (4) F, W, S. Theoretical scrutiny of the problem of authorship in film. Case studies of single directors/ producers/artists and a larger body of films, e.g., Renoir, Riefenstahl, Ford, Godard, Fassbinder, and others. Prerequisite: Film Studies 101A-B-C or consent of instructor.

117A Script Writing (4) F. Writing the short script. Form, structure, and planning. Preparation of scripts for short films: dramatic, documentary, experimental, and other forms. Class assignments and completion of three short scripts.

117B Script Writing and Film Adaptation (4) W. Substantial novels being translated into treatment form, discussed in workshop, along with novels successfully turned into screenplays. Students dramatize scenes from their own treatment and write a paper on a problem of film adaptation. Prerequisite: lower-division writing course. Enrollment limited to 20 students.

117C Advanced Screenwriting (4) S. Continuation of exercises initiated in Film Studies 117A with concentration on alternative approaches to screenwriting, e.g., nontraditional narratives, non-narrative features, experimental explorations. Prerequisite: Film Studies 117A or consent of instructor.

160 National Cinemas (4) F, W, S. Study of the film production of individual nations, concentrating particularly on period styles and "schools." Examples include the French Nouvelle Vague, the New German Cinema, Italian Neorealism, and Classical Hollywood Cinema. Same as French 160, German 160, Italian 160, Russian 160, and Spanish 160. May be repeated for credit when topic varies.

198 Special Topics in Film Studies (4) F, W, S. Exploration of special issues concerned with film history and theory. Examples include close textual analysis, film and pornography, representing war, film and gender.

Prerequisite: Film Studies 101A-B-C or consent of instructor. May be repeated for credit when topic varies.

199 Individual Study (varying credit) F, W, S. Directed reading and research in consultation with a faculty member. Substantial written work required. Prerequisite: consent of sponsoring faculty member.

Department of French and Italian

312 Humanities Hall; (714) 856-6407

Richard L. Regosin, **Department Chair**

Faculty

Daniel Brewer, Ph.D. The Johns Hopkins University, *Associate Professor of French* (eighteenth- and nineteenth-century French literature)

Ellen S. Burt, Ph.D. Yale University, *Associate Professor of French* (poetry)

David Carroll, Ph.D. The Johns Hopkins University, *Professor of French* (literary theory and twentieth-century French literature)

James Chiampì, Ph.D. Yale University, *Associate Professor of Italian* (Italian Renaissance)

Jacques Derrida, Doctorat d'Etat ès Lettres, *Professor of French and Comparative Literature* (philosophy, critical theory)

Suzanne Gearhart, Ph.D. The Johns Hopkins University, *Associate Professor of French* (seventeenth- and eighteenth-century French literature, philosophy and literature)

Elizabeth Guthrie, Ph.D. University of Illinois, *Lecturer in French and Director of the French language program*

Judd D. Hubert, Ph.D. Columbia University, *Professor Emeritus of French* (seventeenth- and nineteenth-century French literature)

Renée Riese Hubert, Ph.D. Columbia University, *Professor Emerita of French and Comparative Literature* (literature and fine arts, modern poetry, surrealism, Romanticism, comparative literature)

Alice M. Laborde, Ph.D. University of California, Los Angeles, *Professor of French* (eighteenth-century French literature)

Jean-François Lyotard, Doctorat d'Etat ès Lettres, *Professor of French* (philosophy, critical theory)

Leslie W. Rabine, Ph.D. Stanford University, *Professor of French* (nineteenth-century French literature and women's studies)

Richard L. Regosin, Ph.D. The Johns Hopkins University, *Department Chair and Professor of French* (sixteenth-century French literature)

Aliko Songolo, Ph.D. University of Iowa, *Professor of French* (French African and Caribbean literature)

Barbara Spackman, Ph.D. Yale University, *Associate Professor of Comparative Literature and Italian* (nineteenth- and twentieth-century literature)

The Department of French and Italian offers courses designed to provide linguistic competence and a broad knowledge of aspects of French and Italian culture: literary, social, historical, and aesthetic. It seeks to enrich students' appreciation of their own civilizations and to create a deeper sense of international understanding.

The program brings the students to participate in the creative process of language, to think in French or Italian as they learn to understand, speak, read, and write. Most classes are taught entirely in the foreign language, and a multiple approach stresses the interdependence of the four basic skills and makes them mutually reinforcing. The Language Laboratory is used to complement classroom activity.

All upper-division literature and culture courses are taught in the seminar mode. Because classes are limited in number of students, they promote and encourage participation and discussion and facilitate direct contact with professors.

Representatives chosen by the undergraduate French majors and by the graduate students 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 various sectors of the world of business and commerce, where they can take advantage not only of their competency in communicating in French but also of what they have learned from the study of French literature and civilization. The study of literature teaches students to think critically and develops analytical skills; it also helps them to express their own ideas clearly and persuasively. In practical terms, these skills will allow them to operate efficiently in marketing, publicity, public relations, and management, where sophistication has become essential. A number of students also follow careers in education, continue their studies in graduate school, or enter the diplomatic service.

The Career Planning and Placement Center provides services to UCI 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 Planning and Placement Center section for additional information.

Undergraduate Program in French

While preparing the student for graduate work and for the teaching profession, the French major is essentially a liberal arts program offering a broad, humanistic course of study.

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, courses in speaking (conversation and phonetics) and writing enable the students to attain a greater degree of proficiency, preparing them for further study in French literature and linguistics and in French civilization and culture.

In the introductory courses in literature, complete 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 vocabulary. At the more advanced level, literature courses may emphasize a single author, movement, or critical problem within a historical period. The content of these courses changes yearly according to the interests of both faculty and students. Senior seminars are offered periodically to discuss literary problems which cannot be dealt with in depth in the regular offerings.

Courses in civilization and culture explore aspects of French history, intellectual thought, and the arts. Courses are offered with a historical emphasis (for instance, the world of the Renaissance in France; the Age of Louis XIV; colonialism; anti-Semitism) and with a comparative orientation (for instance, poetry and painting; literature and society; women in literature; Paris and the history of art; literature and history).

Courses in linguistics introduce students to aspects of the structure of the French language and to phonetics.

Students are placed in French courses according to their years of previous study. In general, one year of high school French is equated with one quarter of UCI work. Thus, students with one, two, three, and four years of high school French will enroll in French 1B, 1C, 2A, and 2B, respectively. Exceptions to this placement formula must be approved by the appropriate course director. Students with transfer credit for college-level French may *not* repeat those courses for credit.

Requirements for the Bachelor's Degree

University Requirements: See page 50–53.

School Requirements: See page 148.

Departmental Requirements for the Major**French Major with Emphasis in Literature and Culture:**

French 11, 100A-B, 101A-B-C, and eight other upper-division courses taught in French, at least six of which must be in literature, culture, or civilization.

French Major with Emphasis in Linguistics: French 11, 100A-B, 101A-B-C, two courses in French civilization, Linguistics 3, 110, 120, 170, and French 113, 131. Prospective elementary and secondary school teachers who choose this option should take as electives additional courses in French language, civilization, and/or literature. Work in French civilization is required by State credentialing authorities.

Residence Requirement for the Major: At least five upper-division courses (above 101A-B-C) required for the major must be completed successfully at UCI.

Departmental Requirements for the Minor

French 100A-B plus five other French courses, four of which must be upper-division. Prerequisite: French 2C or equivalent.

Residence Requirement for the Minor: Four upper-division courses must be successfully completed at UCI.

Planning a Program of Study

The student and the faculty advisor (assigned upon entering the major) should plan a coherent program of courses to fulfill the literature and culture or the linguistics emphasis.

The Department encourages the student to study in France, either through the University's Education Abroad Program or independently. Information is available in the Department Office.

Students should consult with the departmental coordinator of advisors concerning career plans in areas such as teaching, industry, journalism, law, and civil service.

Undergraduate Program in Italian

The Department offers a minor in Italian. Lower-division courses gradually develop the student's mastery of spoken and written Italian and, as the sequence progresses, introduce readings in literature and culture.

A third-year, two-quarter sequence is designed to improve the student's proficiency in aural and written comprehension as well as in speaking and writing skills. A three-quarter introduction to Italian literature acquaints the student with major historical periods and genres, and introduces the student to various critical concepts and vocabulary. Tutorial and seminar courses provide the advanced student with an opportunity for in-depth study of a single author, critical problem, or historical period. From year to year, the Department's offerings in literature vary considerably; students interested in planning course work in Italian should consult with Department of French and Italian faculty.

Students are encouraged to pursue their interests through a major in Humanities, leading to a B.A. degree in Humanities, which combines Italian literature, culture, history, art, and music.

Departmental Requirements for the Minor

Italian 100A-B, 101A-B-C, 130, and one other course outside the Department on Italian history, film, art, or other aspect of Italian culture, chosen in consultation with Department of French and Italian faculty.

Residence Requirement for the Minor: Four upper-division courses must be successfully completed at UCI.

Graduate Program in French

The Department's program of graduate study reflects its concern with the nature of both literature and the critical discourses used to interpret it. Seminars focusing on relationships between literature and theory explore various critical approaches and engage related fields of inquiry such as history, philosophy, aesthetics, psychoanalysis, women's studies, and anthropology.

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. Particularly well-prepared students may receive special permission to take a minimum of nine courses and to write a short thesis, for which two course credits are given. All entering graduate students are counseled by the graduate advisor. During the spring 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 a written and oral comprehensive examination on material drawn from the class program and the Master's reading list. The student writes essays demonstrating skills of literary analysis and an understanding of theoretical concepts and their application to the study of specific literary texts. The oral part of the examination allows elaboration on aspects of the written examination, but seeks as well to test the students' broader knowledge.

The Master's examination is normally given at the end of winter quarter. Students who are Teaching Assistants normally take the examination in the fifth quarter of their studies.

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 Guidance Committee is appointed in consultation with the student. The Guidance 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 composed of three faculty members from the Department, one faculty member from outside the Department, who represents the student's outside area of specialization, and, for the defense, one faculty member who is not affiliated with the School. 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 Guidance Committee.

Course Requirements: A minimum of 18 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 literary theory by taking additional course work in the Department and in the Critical Theory Program beyond the minimum number required.

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. Accordingly, the examination is divided into five topic areas: author, genre, period, critical problem, and an outside area. In consultation with the Guidance Committee, the student defines the precise nature and scope of the topics for the examination, which consists of written and oral parts. Upon successful completion of the written and oral Qualifying Examinations, the student is advanced to candidacy for the Ph.D. degree.

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 must be defended in an oral examination and approved by the Doctoral Committee before the candidate is recommended for the degree.

Three faculty members, chosen by the candidate, proposed by the Department, and appointed by the Graduate Council, constitute the Doctoral Committee which directs the preparation and completion of the doctoral dissertation. The Doctoral Committee supervises an oral defense, the focus of which is the content of the doctoral dissertation, and certifies that a completed dissertation is satisfactory.

Courses in 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.

S1A-B Fundamentals of French (7.5-7.5) Summer. First-year French in an intensified form.

R1 French for Reading (4). Serves those students not planning to major in French who want to develop their reading ability in French rapidly; recommended for graduate students in any field who need a reading knowledge of another language.

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. (V)

11 French Phonetics (4) W. 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 2C or equivalent. Same as Linguistics 11.

13 Conversation (4) F, W, S. Helps students increase their fluency and enrich their vocabulary. Prerequisite: French 2C or equivalent.

50A-B-C French Connections (4-4-4). In English. Introduces students to essential aspects of French culture from the Renaissance to modern times, from the perspective of France's interaction with other cultures. With special emphasis given to the study of the relations of France with England, America, and the Third World, the literature, art, and philosophy of France are studied in order to understand the role of France in the formation of the modern world. (IV, VII-B)

60 French Outside of France (4). Examines the relationships between France, its former colonies, and other regions in the world whose cultures may be described as France-based. Conducted in English. May be repeated for credit as topic varies. (VII-B)

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 100A or equivalent.

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. French 100A and 100B are recommended as prerequisites but may be taken concurrently with French 101A-B-C. (VII-B)

105 Advanced Composition and Style (4). Helps the student attain greater proficiency and elegance in the written language. Prerequisites: French 100-B.

NOTE: The prerequisite for the following upper-division courses, except French 113 and 131, is French 101A-B-C or the equivalent. The content of these upper-division courses changes yearly. Students should consult the offerings in linguistics under the Program in Linguistics. NOTE: Courses numbered 110 through 198, except 139 and 180, may be repeated for credit when topics change.

110 Problems in French Culture (4). (VII-B)

113 Topics in French Linguistics (4) S. Prerequisites: French 11 or Linguistics 50, and French 100A-B. Recommended: Linguistics 110 and 120.

115 Medieval Literature and Culture (4). (VII-B)

116 Sixteenth-Century French Literature (4). (VII-B)

117 Seventeenth-Century French Literature (4). (VII-B)

118 Eighteenth-Century French Literature (4). (VII-B)

119 Nineteenth-Century French Literature (4). (VII-B)

120 Twentieth-Century French Literature (4). (VII-B)

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. (VII-B)

127 Francophone Literature and Culture (4). To study literature and cultures of the francophone world. (VII-B)

130 Junior-Senior Seminar in French Literature (4). Work on a specific topic of French literature or criticism. May be repeated. Prerequisite: two upper-division literature courses beyond French 101.

131 Junior-Senior Seminar in French Linguistics (4). Prerequisites: French 11 or Linguistics 3, and French 100A-B. Recommended: Linguistics 110 and 120.

139 Literature and Society (4). In English. Readings of masterpieces of French literature in their social, political, and historical contexts. Course requires at least 4,000 words of assigned composition based on French works. Several essays required. Topics vary. French majors have admission priority. Prerequisites: satisfaction of lower-division writing requirement; junior standing or consent of instructor. (VII-B)

140 Studies in French Literary Genre (4)

150 Topics in French Literature and Culture (4). In English. May not be counted toward the major. Same as Humanities 170FA. (VII-B)

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 Studies 160. (VII-B)

170 History and Literature (4)

171 Politics and Literature (4)

180 Junior/Senior Seminar in Theory and Criticism (4). May be repeated for credit once when topics vary.

198 Special Studies in French Linguistics (4-4-4) F, W, S. To be taken only when the materials to be studied and the topic to be pursued lie outside the departmental offerings, when the student will have no formal chance in the course of several years to pursue the subject of interest, and when the subject fits significantly into the student's major program. Prerequisites: consent of instructor and of 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.

199 Special Studies in French (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.

Graduate

The content of these courses changes yearly. Students should also consult the offerings of the Program in Linguistics.

In addition to the following courses, graduate students in French might find these Humanities courses of special interest: Humanities 200 (The Nature and Theory of History); Humanities 210 (Approaches to Linguistic Study); Humanities 220A-B-C (Literary Theory); Humanities 230 (Philosophical Analysis); and Humanities 270A-B-C (Advanced Topics in Critical Theory).

200 Selected Topics in French Linguistics (4). May be repeated for credit when topics vary.

201 History of the French Language (4)

202 Contrastive French Phonology (4)

203 Contrastive French Morphology and Syntax (4)

NOTE: Courses numbered 210A-B-C through 399, except 280 may be repeated for credit when topics vary.

210 Studies in Medieval Literature (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)

230 Studies in Dramatic Literature (4)

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)

253 Philosophy and Literature (4)

254 History and Literature (4)

260 Studies in Literary Criticism and Theory (4)

271 Feminist Studies (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.

291 Research in French Linguistics (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 291s can be approved. M.A. candidates may take French 291 or French 290 only once; Ph.D. candidates may take French 291 or French 290 twice.

299 Dissertation Research (4 to 12) F, W, S

399 University Teaching (4-4-4) F, W, S. Required of and limited to Teaching Assistants.

Courses in 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.

R1A Italian for Reading (5). Intended for students who wish to acquire a reading knowledge of Italian in the briefest time possible. Recommended for graduate students of any discipline who require a reading knowledge of a foreign language. Open to nonmajors.

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: normally three years of high school Italian or one year of college Italian. (V)

60 Imagining Italy (4). An examination of the construction of political and cultural identity both within and in relation to Italy. Taught in English. May be repeated for credit when topics vary. (VII-B)

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

100A-B Italian Language and Civilization (4-4). Systematic review of grammar with written and oral composition on topics chosen from readings on Italian culture and civilization. Prerequisite: completion of Italian 2C or equivalent. (VII-B)

101A-B-C Introduction to Italian Literature (4-4-4). Introduction to all of the genres of a narrowly defined period in relationship to a specific literary problem. In Italian. Recommended: Italian 100A-B. (VII-B)

130 Major Italian Literary Figures (4). Examines a major Italian literary figure selected from a period of Italian literature. May be repeated when topic varies. Prerequisite: Italian 101A-B-C.

140A-B-C Readings in Medieval and Renaissance Literature (4-4-4). In English.

150 Topics in Modern Italian Culture (4). In English; no prerequisites. May be repeated for credit when topic changes. (VII-B)

160 Italian Cinema (4-4). In English. May be repeated but may be taken only twice for credit. Same as Film Studies 160. (VII-B)

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

400E Humanities Office Building; (714) 856-6406

Meredith Lee, **Department Chair**

Faculty

Gail Hart, Ph.D. University of Virginia, *Assistant Professor of German* (eighteenth- and nineteenth-century German literature, drama, fictional prose)

Ruth Kluger, Ph.D. University of California, Berkeley, *Professor of German* (Kleist, nineteenth-century literature, Stifter, Holocaust literature)

Meredith Lee, Ph.D. Yale University, *Department Chair and Associate Professor of German* (lyric poetry, Goethe and eighteenth-century literature, German-Scandinavian literary relations)

Herbert Lehnert, Ph.D. University of Kiel, *Professor of German* (modern German literature)

William J. Lillyman, Ph.D. Stanford University, *Professor of German* (Romanticism, Goethe, Tieck)

Bert Nagel, Ph.D. University of Heidelberg, *Professor Emeritus of German* (medieval German literature)

Eric Rentschler, Ph.D. University of Washington, *Director of the Program in Film Studies and Professor of German* (German film, modern German literature, German comedy)

Thomas P. Saine, Ph.D. Yale University, *Professor of German* (eighteenth-century German literature, Goethe)

John H. Smith, Ph.D. Princeton University, *Associate Professor of German* (eighteenth- and nineteenth-century literature and intellectual history, literary theory)

The Department of German sees its contribution in the context of the humanistic endeavor to understand and evaluate Western culture. We can understand ourselves and our immediate culture more clearly through the study of related but different languages and cultures. The Department offers courses on the German language and on German literature and film. The study of German literature is pursued from various critical perspectives. Some courses emphasize its historical, social, and political significance and setting; in others literature is approached as an imaginative experience which transcends its immediate context. The history of German literature and film, the theory of literature and literary criticism, and the relations of German literature to other literatures are also studied in the Department's courses.

Undergraduate Program

The German major offers alternative emphases, one in literature and another in linguistics.

All courses in the Department are taught in German to the extent compatible with the aim of the course. In the basic courses the student will develop an understanding of the nature of the language, based on linguistic principles, while learning the necessary skills. Use is made of the Language Laboratory. At the end of the first year, students will have attained mastery of the basic structure of the language.

At the intermediate and advanced levels the student's ability to read and write German will be developed gradually. A three-quarter, third-year course stresses composition and provides an introduction to contemporary German culture. It can be followed by a course in phonetics which aims to perfect the pronunciation as well as to introduce historical and dialectal variants. The introductory course in literature, usually taken in the third year, presents a first view of some periods of German literary history, familiarizes the student with German terminology used in the interpretation of literature, and uses these concepts in practical interpretations. A certain number of courses in the series German

117, 118, 119, 120 will be designated as "core courses" which cover German literature from the Reformation to the present and are especially recommended for majors. It is assumed that the student is familiar with basic concepts of literature in English. A further series of courses (German 130, 140, 160) treats questions of theme and genre and topics in literary theory and criticism, as well as perspectives in German cinema.

Students are given the opportunity to participate in programs of work and study abroad during the summer and the junior year. The University's Education Abroad Program has study centers in Göttingen and Vienna, among other locations. Certain courses taken while participating in the Education Abroad Program are recommended as contributing to fulfillment of the German major requirements.

Students are placed in German courses according to their years of previous study. In general, one year of high school work is equated with one quarter of UCI work. Thus students with one, two, three, and four years of high school German will normally enroll in German 1B, 1C, 2A, and 2B respectively. Exceptions to this placement procedure must have the approval of the director of first- or second-year German instruction. Students with transfer credit for college-level German may *not* repeat those courses.

Careers for the German Major

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 fine arts. The ability to speak and write German, when combined with other skills and specific training, can open up opportunities in communications, foreign trade and banking, transportation, government, science and technology, tourism, library services, and teaching.

Recent graduates of the German Department have begun careers in international law, business, the foreign service, the airline industry, professional translating, journalism, and all levels of education, including university teaching.

The Career Planning and Placement Center provides services to UCI 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 Planning and Placement Center section for additional information.

Requirements for the Bachelor's Degree

University Requirements: See pages 50–53.

School Requirements: See page 148.

Departmental Requirements for the German Major with Literature Emphasis

German 100A-B-C; German 101; eight upper-division literature courses; and two courses selected from German 140, 150, 160, Linguistics 3, English and Comparative Literature CL 50A-B-C, a course in German history, or a course in German philosophy, as approved by the advisor for the major. German 139 may not be used to satisfy major requirements.

Students who plan to acquire a teaching credential, or intend to do graduate work in literature, are encouraged to take the major with literature emphasis.

Departmental Requirements for the German Major with Linguistic Emphasis

German 100A-B-C; German 101; five upper-division literature courses; Linguistics 3, 110, 120; one course selected from Linguistics 170, a Middle High German course, or a course in the history of the German Language; one course selected from

German 140, 150, 160. German 139 may not be used to satisfy major requirements.

The German major with linguistic emphasis is recommended especially for students who intend to do graduate work in linguistics or enter a linguistics-related profession.

Residence Requirements for the Major: At least five of the upper-division courses required for the major must be completed successfully at UCI.

Departmental Requirements for the Minor

Seven upper-division courses, which must include German 100A-B-C and German 101. Not more than one course from German 140, 150, or 160 may be counted for the minor. German 139 may not be used to satisfy minor requirements.

Residence Requirement for the Minor: Four upper-division courses required for the minor must be completed successfully at UCI.

Graduate Program

In its graduate courses the Department stresses theoretical understanding of the nature of literature in its specific application to literature written in the German language. The Department also offers regular courses devoted to the history, analysis, and theory of German film, viewing the medium in its relationship to other forms of expression as well as considering it as an art form in its own right.

Courses also are offered elucidating the structure and history of the German language.

The graduate program in German is essentially a program leading to the Ph.D. The M.A. requires a minimum of one year in academic residence and must be completed in no more than two years of full-time graduate study. The Department will decide after completion of the M.A., at the latest, whether or not to permit the student to continue in the Ph.D. program. The M.A. thus may be in some cases a terminal degree. 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 allow continuation toward the Ph.D.

Students who enter with normal academic preparation and pursue a full-time program of study ordinarily should be able to earn the Ph.D. degree within six years or less.

Master of Arts in German

Before entering the program, a candidate is expected to have the equivalent of our undergraduate major. Students with a bachelor's degree in another subject may be considered for admission. Normally their course of studies 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.

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 in 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 essay two weeks before the oral examination. It is the student's responsibility to keep the reading list current.

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.

The Oral Examination. During the oral examination the following items will be discussed: (a) the essay, (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 Course in University Teaching (399)

One Year of Residence

Ph.D. 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, etc., suitable for the individual student's program of study. The course Introduction to Middle High German and one course in medieval German literature are required. 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.

Comprehensive Examination. There are two parts to the examination. In order to fulfill the written examination requirement the student will choose either (1) to present a lecture to the faculty and to the other graduate students, or (2) to write a three-part examination (one part on a significant author, one on a major genre, and one on an historical period) within a period of two weeks. These examination essays may be either closed-book or take-home, by agreement with the candidate's examination committee. The examination essays or the lecture will be on a text or texts selected by the faculty from a reading list submitted by the student for the comprehensive examination. The second part of the comprehensive examination is the formal oral qualifying examination of up to three hours duration ranging over the whole field of the student's studies, to be taken within two weeks after completion of the written examination. The student will submit the reading list at least two weeks before the written examination after consultation with the members of the examination committee.

Language Requirements. The candidate must demonstrate reading competence in two languages or extensive competence in one language other than German or English. Choice of language(s) depends on the student's area of specialization. French and Latin are recommended. For the various ways in which these requirements may be fulfilled, the student should see the graduate advisor.

Dissertation. Toward the end of the second year of study, the student should formulate a tentative dissertation topic. Three faculty members proposed by the Department and appointed by the Graduate Council constitute the Doctoral Committee which directs the preparation and completion of the dissertation. The Doctoral Committee certifies that a completed dissertation is satisfactory through the signature of the Committee members on the title page of the dissertation.

Courses in German

Lower-Division

NOTE: A student may take any one of the three first-year courses: German 1A-B-C; R1A-B-C; S1A-B.

1A-B-C Fundamentals of German (5-5-5) F, W, S. Basic language skills of understanding, speaking, reading, and writing. Classes conducted in German. Language Laboratory attendance is required.

R1A-B-C Fundamentals of German (with emphasis on reading) (4-4-4) F, W, S. For students not planning to major in German who want to develop reading ability rapidly. Does not serve as prerequisite for any higher-level course in German.

S1A-B Fundamentals of German (7.5-7.5) Summer. First-year German in intensive form. Not offered in 1991.

2A-B-C Intermediate German (4-4-4) F, W, S. Conversation, reading, and composition skills; texts of literary and social interest. Intensive review of grammar. Conducted in German. Prerequisite: German 1C. (V)

53 Advanced Conversation (2) S. Includes reading of political and cultural material. Prerequisite: German 2C.

Upper-Division

NOTE: Upper-division courses normally are taught in German. Exceptions are German 103, 139, 140, 150A-B-C, and 160.

100A-B-C Advanced Composition (4-4-4) F, W, S. Competence in writing and reading expository German. (VII-B)

101 Introduction to Literature (4) F. Sample interpretations of poetry and prose. Introduction to critical language in German. Prerequisite: German 2C. (VII-B)

102A Literature and Society Since World War II (4). Interdisciplinary introduction to recent German literature not only as an aesthetic phenomenon but also as a social and political force. Methodological problems arising from an analysis of literature in its historical context. Prerequisite: German 2C or consent of instructor.

102B Literature and Society 1918-1945 (4). See above description. Prerequisite: German 2C or consent of instructor.

103 German Phonetics (4) S. Contrastive analyses of the sound of English and German. Emphasis on standard German pronunciation. Prerequisite: German 2C. Not offered 1991-92.

NOTE: Courses numbered 117 to 199 (with the exception of German 139) may be repeated provided course content changes. German 101 or consent of instructor is prerequisite for courses 117 to 120.

117 Topics in German Literature 750-1750 (4). Specific course content determined by individual faculty members. Example: Luther and the European Renaissance. Same as Humanities 170GA. (VII-B)

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. Same as Humanities 170GB. (VII-B)

119 Studies in Nineteenth-Century German Literature (4). Individual authors such as Büchner, Grillparzer, Keller, and Nietzsche, or broader social-literary phenomena. Same as Humanities 170GC. (VII-B)

120 Studies in Twentieth-Century German Literature (4). Individual authors such as Thomas Mann, Brecht, Kafka, Rilke, and Grass, or topics addressing questions of genre such as the drama of German Expressionism. Same as Humanities 170GD. (VII-B)

130 Topics in German Literature (4). Literary topics not fully contained within the periods listed above, such as "German Comedy," "The Novel from Wieland to Fontane." Same as Humanities 170GE.

139 Writing about Literature (4). In English. Requires at least 4,000 words of assigned composition based upon readings in Germanic literatures. Several essays required. Topics vary. German majors given admission priority. Prerequisites: satisfaction of lower-division writing requirement; junior standing or consent of instructor. Same as Humanities 170GF.

140 Topics in Literary Theory and Criticism (4-4-4). 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 *Rezeptionsästhetik* are explored in a selection of theoretical, critical, and literary texts. Same as Humanities 170GG.

150A-B-C German Literature in Translation (4-4-4) F, W, S. Major German literary works in translation. Same as Humanities 170GH. (VII-B)

160 German Cinema (4). Historical, theoretical, and comparative perspectives on German cinema. Same as Film Studies 160. Same as Humanities 170GJ. (VII-B)

199 Individual Study (4) F, W, S. May be repeated for credit.

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 and School of Humanities.

Three core courses dealing with the lyric, drama, and novel traditions are offered, normally one each year. These courses combine theoretical with historical considerations and practical interpretations. Other graduate courses aim at letting the student share in the research interests of the faculty at the frontiers of on-going scholarship. Such courses may be devoted to topics, methods of interpretation and research, or individual authors.

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 Directed Reading (4). For students preparing for doctoral examination. Satisfactory/Unsatisfactory Only.

299 Dissertation Research (4 to 12) F, W, S. 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 (4-4-4) F, W, S. Required of and limited to Teaching Assistants.

Department of History

300 Humanities Office Building; (714) 856-6521

Michael P. Johnson, **Department Chair**

Faculty

- Amy T. Bushnell, Ph.D. University of Florida, *Lecturer in History* (Colonial Latin America)
- Cornelia H. Dayton, Ph.D. Princeton University, *Assistant Professor of History* (early American, legal and social, women's)
- Richard I. Frank, Ph.D. University of California, Berkeley, *Associate Professor of History and Classics* (Roman empire, Classics)
- James B. Given, Ph.D. Stanford University, *Associate Professor of History* (Medieval Europe)
- Jack P. Greene, Ph.D. Duke University, *UCI Distinguished Professor of History* (Early American)
- Lamar M. Hill, Ph.D. University of London, *Professor of History* (Britain in the Tudor-Stuart era)
- Karl G. Hufbauer, Ph.D. University of California, Berkeley, *Professor of History* (social history of science)
- Jon S. Jacobson, Ph.D. University of California, Berkeley, *Associate Professor of History* (European international)
- Michael P. Johnson, Ph.D. Stanford University, *Department Chair and Professor of History* (American social and political)
- Lynn Mally, Ph.D. University of California, Berkeley, *Associate 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, nineteenth-century)
- Henry Cord Meyer, Ph.D. Yale University, *Professor Emeritus of History* (twentieth-century Europe)
- Robert G. Moeller, Ph.D. University of California, Berkeley, *Associate Professor of History* (modern Germany, European women)
- Keith L. Nelson, Ph.D. University of California, Berkeley, *Associate Professor of History* (American foreign relations)
- Patricia A. O'Brien, Ph.D. Columbia University, *Associate Professor of History* (modern French social)
- Spencer C. Olin, Jr., Ph.D. Claremont Graduate School, *Professor of History* (American social and political)
- Kenneth L. Pomeranz, Ph.D. Yale University, *Assistant Professor of History* (Modern China)
- Mark S. Poster, Ph.D. New York University, *Professor of History* (modern European intellectual)
- David C. Rankin, Ph.D. The Johns Hopkins University, *Associate Adjunct Professor of History* (American social, Black history)
- Jaime E. Rodríguez, Ph.D. University of Texas, *Professor of History* (Latin America, Mexico)
- Amy Dru Stanley, Ph.D. Yale University, *Assistant Professor of History* (American women's)
- Timothy Tackett, Ph.D. Stanford University, *Professor of History* (Old Regime Europe, French Revolution)
- Steven C. Topik, Ph.D. University of Texas, *Associate Professor of History* (Latin America)
- Jonathan M. Wiener, Ph.D. Harvard University, *Professor of History* (history and social theory)
- R. Bin Wong, Ph.D. Harvard University, *Associate Professor of History* (modern Chinese, comparative economic)

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 offers a variety of approaches to history, and each emphasizes basic disciplinary skills: weighing evidence, expository writing, 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 breadth requirement. The Department requires all majors to take a survey course in United States history, European history, East Asian history, or Latin American 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., European International History), 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 the following areas: 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 research seminar in primary materials that culminates in the writing of a research paper.

Faculty members in the Department of History work closely with their students. All upper-division History majors are assigned a faculty advisor, whom they are encouraged to consult at least once each quarter.

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. 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 Career Planning and Placement Center provides services to UCI 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 Planning and Placement Center section for additional information.

Requirements for the Bachelor's Degree

University Requirements: See pages 50–53.

School Requirements: See page 148.

Departmental Requirements for the Major

Fourteen courses are required: a year-long survey selected from United States history (History 40A, 40B, 40C), European history (History 41A, 41B, 41C), Latin American history (42A, 42B, 42C), or East Asian history (History 43A, 43B, 43C); five upper-division History courses; two colloquia (History 190), one of which is followed by a research seminar (192); and three additional lower- or upper-division History courses.

If a student has satisfied the survey requirement with United States or European history, then at least two of the other required History courses selected must deal with Latin American or East Asian history. Conversely, if a student has satisfied the survey requirement with Latin American or East Asian history, then at least two of the other required History courses selected must deal with United States or European history.

Residence Requirement for the Major: Three historical studies, a colloquium, and a research seminar must be completed successfully at UCI.

Departmental Requirements for the Minor

Seven courses are required: a year-long survey in United States history (40A, 40B, 40C), European history (41A, 41B, 41C), Latin American history (42A, 42B, 42C), East Asian history (43A, 43B, 43C), or Crises and Revolutions (50A, 50B, 50C); and four upper-division History courses.

Residence Requirement for the Minor: At least four upper-division History courses must be completed successfully at UCI.

Graduate Program

The graduate program leading to the M.A. and Ph.D. degrees in History is 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 an advanced degree 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 Department's curriculum is a year-long 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.

During the first year of study, graduate students take a proseminar and the associated one-quarter research seminar. Each proseminar provides an orientation to the literature on a broad historical subject, and an 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 take a second proseminar. They also take a two-quarter research seminar where they have an opportunity to work on problems of their own choosing; students entering with an M.A. degree must also take this seminar.

The colloquium, a reading course that examines the chief historical works in a "time-place" field, enriches the student's knowledge of the main areas of historical research and develops critical reading skills. Colloquia are offered yearly in American history and modern European history, biannually in early modern European history, Latin American history, and ancient history, and occasionally in medieval history. A student may prepare a dissertation in any of these fields. 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 preparation for a comprehensive examination. These fields are: first "time-place" field (field in which the dissertation is written) and second "time-place" field.

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 Irvine 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.

Master of Arts in History

Requirements for Admission. Although it is desirable that an applicant have the equivalent of an undergraduate major in History, the Department also accepts 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 3.0 (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. Examples of written work in history from undergraduate courses are suggested but not required. Students are accepted for admission for fall quarter only, and the deadline for application for fall admission is February 1.

Program of Study. The M.A. program emphasizes the theoretical and historiographical dimensions of history. 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 History and Theory (History 200A-B-C), three in "time-place" colloquia, two in proseminars, and one in a related first-year research seminar. Students intending to pursue the Ph.D. should begin at once to delineate doctoral interests in order to fit their work for the M.A. into the total program.

Language Requirement. Normally a reading knowledge of one foreign language is required for the M.A. degree. Students in American history, with an advisor's permission, may substitute a one-quarter departmental course in quantitative methods for the M.A. foreign language requirement. Language competency is demonstrated by passing a departmental examination administered by a faculty member proficient in the chosen language.

Comprehensive Examination. At the end of the final quarter the M.A. candidate must pass a comprehensive oral examination covering the student's major field (e.g., America, Early Modern Europe) and focusing upon material assigned in the three-quarter "time-place" colloquium series.

Time Limits. The M.A. requires a minimum of one year in academic residence and must be completed in no more than two years of graduate study.

Doctor of Philosophy in History

Requirements for Admission. Applicants submit transcripts, three letters of recommendation, and aptitude scores from the Graduate Record Examination. In addition, samples of written work and a departmental interview may be required.

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, 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 advantage in speeding them to examinations.

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.

Incoming students are admitted for fall quarter only, and the deadline for application for fall admission is February 1.

Program of Study. The Department requires doctoral students to prepare themselves in three different areas:

1. History and Theory.
2. The first "time-place" 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 "time-place" field (such as American History), which is designed as a second teaching field.

The courses required in this preparation include the History and Theory sequence, colloquia series in both time-place fields, First-Year Proseminar/Research Seminar sequence, and the Second-Year Research Seminar. The normal academic load is three courses per quarter. However, applicants may be eligible for approved part-time status, which allows students to take a lighter course load at reduced fees.

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 examinations.

Language Requirements. All students, except as specified below, must demonstrate a reading knowledge of two foreign languages prior to taking Ph.D. candidacy qualifying examinations. Competency in a language may be established either by passing a departmental examination 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 student's first time-place field.

Students in American history may use a substitute for one of their languages. They may take either the Department's graduate course in quantitative methods or two graduate courses in an allied discipline (e.g., critical theory, political theory, cultural anthropology, feminist theory, art history linguistics). Students pursuing the second option will be expected to write a substantial paper that demonstrates the value of the allied discipline to historical inquiry.

Qualifying Examinations and Dissertation. After completing the appropriate courses and other preparatory work, the student will take written examinations in the two "time-place" fields, followed by the oral Qualifying Examination in the first "time-place" field. Successful completion of these examinations results in the student's advancement to Ph.D. candidacy. Within three months of the oral examination, new candidates present an open seminar on their dissertation proposal. Once the Doctoral Committee approves the proposal, the student begins intensive work upon the dissertation. The research and writing involved in this effort are expected to require from one to three years. At the end of this period an oral defense of the dissertation normally will be held, focusing on the adequacy of the student's research and thesis.

Students who enter with normal academic preparation and pursue a full-time program of study should be able to earn the Ph.D. degree within six years.

Courses in 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 breadth requirement.

9 Historical Problems (4-4-4). How historians define problems and answer them is shown through careful study of particular questions.

10 Survey of American History (4) Summer. Designed especially for students seeking to satisfy the History portion of the UC American History and Institutions requirement. Examines a number of leading issues in American life from colonial times to the present, including immigration, the role of slavery, industrialization, the rise of the United States as a world power, and its diversity of cultures. (See also History 40A, 40B, 40C.)

11 Introduction to Peace and Conflict (4) F. 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 Global Peace and Conflict Studies. (VII-B)

12 Women in History (4). Women's experience and the use of gender as an analytic category in the literature of modern women's history. May be repeated for credit as topic varies. Same as Humanities 55A. (IV, VII-A)

35 The Formation of Ancient Society. A unified view of the cultures of the Mediterranean world in Antiquity. Focuses on major institutions and cultural phenomena, as seen through the study of ancient literature, history, archaeology, and religion. Same as Classics 35A-B-C.

35A Origins of Greek Society (4) F. (IV)

35B Classical Greece (4) W. (IV)

35C Ancient Rome (4) S. (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)

41 The Formation of European Society. An introduction to the social, economic, political, and cultural development of Europe from the fourteenth century to the present.

41A The Formation of European Society: From the Fourteenth to the Eighteenth Century (4). (IV, VII-B)

41B The Formation of European Society: The Eighteenth and Nineteenth Centuries (4). (IV, VII-B)

41C The Formation of European Society: 1914 to Present (4). (IV, VII-B)

42 Latin American Survey. An overview of Latin American history from pre-Columbian civilizations to today. Topics include native cultures, European conquest, colonialism, independence, nation-building, economic development, foreign influences, social protests, and revolutions.

42A Pre-Columbian Civilizations and European Colonization (1200-1750) (4) F. (IV, VII-B)

42B Independence and the Nineteenth Century (4) W. (IV, VII-B)

42C Twentieth Century (4) S. (IV, VII-B)

43 East Asia: Traditions and Transformations. A survey of the distinctive cultures and histories of China, Japan, and neighboring countries. The first quarter is devoted to premodern patterns of politics, thought, social organization, and economic activity. The second and third quarters focus

principally upon the modern histories of China and Japan, with attention to the different responses to Western impact each country made.

43A Pre-Modern East Asia (4) F. (IV, VII-B)

43B Modern China (4) W. (IV, VII-B)

43C Modern Japan (4) S. (IV, VII-B)

50 Crises and Revolutions. Study of turning points in world history, illustrating themes and methods of historical analysis.

50A Premodern Crises and Revolutions (Before 1600) (4) F.
Topics vary. (IV, VII-B)

50B Modern Crises and Revolutions (1600–1900) (4) W. Topics vary. (IV, VII-B)

50C Contemporary Crises and Revolutions (Since 1900) (4) S.
Topics vary. (IV, VII-B)

60 Introduction to the History of Science (4) F. The emergence of modern science between 1500 and 1800. Case studies to illuminate revolutionary change in science and the impact of science-based technology on society. (IV)

Upper-Division

HISTORICAL STUDIES

Courses in which students gain experience in analysis, interpretation, and writing. No prerequisites.

ANCIENT HISTORY

103 The Roman Empire. Creation of a bureaucratic empire; rule by gentry and officers; official culture and rise of Christianity; social conflict and political disintegration.

103A Early Roman Empire (4)

103B Later Roman Empire (4)

105 The Classical Tradition (4)

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. (VII-B)

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. (VII-B)

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. (VII-B)

112 Medieval Kingship (4). Examination of the role kings played in the medieval polities of which they were the nominal rulers.

114A England in the Early Middle Ages (4). Survey of English history from ca. 400 to ca. 1200. Topics discussed include the Anglo-Saxons, the Viking settlement, the Norman Conquest, the Angevin Empire, and the development of royal, legal, and administrative mechanisms.

114B 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 Wars of the Roses.

116 Social Conflict in Medieval Europe (4). Examination of the social and political divisions in late medieval society that produced large-scale uprisings. Particular attention is given to the English Peasants' Rebellion, the Glyndwr uprising in Wales, and the Hussite movement in Bohemia.

118 Topics in Medieval Europe (4). Topics vary.

EARLY MODERN EUROPE

120A Renaissance Europe (4). Survey of the Renaissance in Italy and in northern Europe.

120B Reformation Europe (4). Survey of the Protestant and Catholic Reformations in sixteenth- and seventeenth-century Europe.

120C 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.

122A Tudor England (4). Survey of English history from the fifteenth century until the early seventeenth century. Course concentrates on the formation of Tudor political, social, and economic institutions.

122B Stuart England (4). Survey of English history from the early seventeenth century until the early eighteenth century. Focus on the causes of the English Revolution and the Revolution itself, the Restoration, and the Protestant ascendancy.

122D Constitutional and Legal History: Anglo-Saxons to 1485 (4)

122E Constitutional and Legal History: From 1485 (4)

123 Topics in Early Modern English History (4). Topics vary.

124 Early Modern France (4). France from 1453 to 1789. Topics include the development of the modern state, social and economic changes, and events leading to the French Revolution.

126 Early Modern Spain (4)

128 Traditional Russia to 1685 (4)

129 Topics in Early Modern Europe (4). Topics vary.

MODERN EUROPEAN HISTORY

130 Modern Europe. Political and social developments in England, France, and Germany.

130A Modern Europe: 1789–1850 (4)

130B Modern Europe: 1850–1914 (4)

130C Modern Europe: 1914 to Present (4)

132 European Intellectual and Cultural History. Main currents of Western thought, emphasizing English, French, and German thinkers.

132A The Enlightenment Europe (4). (VII-B)

132B Hegel to Nietzsche (4). (VII-B)

132C Freud to Sartre (4). (VII-B)

133 European International History. Europe and world politics; the wars and diplomacy of the major powers.

133A Europe and the Rise of World Powers: 1815–1900 (4). (VII-B)

133B Europe and the World Crises: 1900–1939 (4). (VII-B)

133C The Second World War (4). (VII-B)

133D Europe, the Cold War, and the Superpowers: 1945–1990 (4). (VII-B)

134 British History. Britain from the Early Modern period to the present.

134A Modern Britain: 1715 to 1832 (4)

134B Modern Britain: 1832 to 1885 (4)

134C Modern Britain: 1885 to Present (4)

134D British Traditions of the Eighteenth and Nineteenth Centuries (4). (VII-B)

134E Australia and New Zealand: Colony to Commonwealth (4)

135 Modern France. Emphasis on social, economic, and cultural history of France since the Great Revolution.

135A The French Revolution and Napoleon (4). (VII-B)

135B France: 1815–1914 (4). (VII-B)

135C France: 1914 to Present (4). (VII-B)

136 Modern Germany. Political, social, and economic history from 1815 to the present.

136A Emergence of the German Nation: 1815–1890 (4). (VII-B)

136B From the Kaiserreich to the Third Reich: 1890–1939 (4). (VII-B)

136C World War, Cold War, and Reunification: 1939–Present (4). (VII-B)

137 Russian History. Political and social developments from traditional Russia to the present Soviet society.

137A Imperial Russia: 1689 to 1905 (4). (VII-B)

137B Russian Revolution and Soviet Society: 1905 to 1965 (4). (VII-B)

138 Modern Spanish History

138A Modern Spain: Liberalism, Ideology, and Dictatorship (4)

139 History and Prose Composition (4-4-4) F, W, S, Summer.

Requires at least 4,000 words of assigned composition based upon historical works. Topics vary from quarter to quarter. History majors are given admission priority. Prerequisites: satisfaction of the lower-division writing requirement; junior standing or consent of instructor.

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)

140B Revolutionary America: 1740–1790 (4)

140D-E Nineteenth-Century United States (4-4)

140F-G Twentieth-Century United States (4-4)

142 American Social and Economic History

142A Slavery and Freedom (4). A social history of slavery in America, emphasizing appropriate comparisons to slavery elsewhere in the world and to free labor in the United States.

142B 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 life styles in the nineteenth and twentieth centuries. Examination of both the ideological foundations of communitarianism and specific historical case studies.

142C 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.

144 American Intellectual and Cultural History

144A Puritanism and the Enlightenment (4)

144B Transcendentalism and the Civil War Crisis (4)

144C Pragmatism, Marxism, and Neo-Conservatism (4)

146 History of American Foreign Relations

146B United States Foreign Relations Since World War II (4).

Deals with relations between the U.S. and the remainder of the world since 1940, giving particular attention to U.S. "cold war" and "detente" with the communist powers, the growing ties with European and Asian allies, and the continuing impact on less-developed nations. (VII-B)

146C Imperialism in United States History (4). (VII-B)

148 A-B Religion and Society in the United States (4-4)

150 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. Same as Humanities 171A, 171B.

150A United States Women to 1820 (4). (VII-A)

150B United States Women: 1820–1980 (4). (VII-A)

152 Topics in Multicultural United States History

152A Race Relations in the Civil War Era (4). Covering the years 1845 to 1877, explores the transition from a slave to a free labor-

based system of race relations in the United States; comparisons with other New World experiments in emancipation. (VII-A)

152B Racial Minorities in California: 1769–1990 (4). Examines racial minority group experiences throughout California history in terms of several major themes such as colonization, immigration, race relations, agricultural development, the emergence of corporate capitalism, capital-labor relations, social conflict, and political reform. (VII-A)

152C Law and Minorities in United States History (4). An analysis of American law as it has affected major minority groups throughout United States history. Readings focus on legal cases and documents, and class sessions are conducted in the Socratic method. (VII-A)

152D Introduction to 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. (VII-A)

LATIN AMERICAN HISTORY

160 Latin America

160A Colonial and National Period: 1300 to 1850 (4). Examines Native American societies from Mexico south before Columbus, the impact of Spanish and Portuguese colonialism on the formation of New World societies and economic systems, independence movements, and the subsequent struggles to create nation-states up to 1850.

160B Latin America Since 1850 (4). Economic, social, and political evolution from 1850 to today. Topics include export economies; industrialization; the Mexican, Cuban, and Central American revolutions; and military dictatorships.

161 Mexico

161A Indian and Colonial Societies (4)

161B Nineteenth Century (4)

161C The Mexican Revolution—Twentieth Century (4)

162 Brazil (4). Overview of social, economic, and political developments since 1500.

163 Central America and the Caribbean (4). Examination of the historical roots and causes of the contemporary unrest in Central America and the Caribbean, including events within the individual nations and the role of the major powers in the area.

166 United States—Latin America Relations (4). U.S. relations with Latin America with emphasis on the twentieth century. Topics include the Monroe Doctrine, Mexican-American and Spanish-American Wars, the Big Stick and Good Neighbor policies, and recent events in Central America and the Caribbean.

169 Topics in Latin American History—Special Studies (4). Topics vary.

ASIAN HISTORY

170 Asia

170A Pre-Modern Asia, Antiquity to 1800 (4). Origins to 1800, a survey of the philosophical, religious, literary, and artistic developments in China and Japan prior to extensive contact with western civilizations.

170B Modern Asia : 1800 to Present (4). Survey of the history of western (and then Japanese) imperialism, modernizing revolutions, social conflict, industrialization, and great power conflict.

172 China

172A China to 1800 (4). A survey of the history of China to 1800. (VII-B)

172B China since 1800 (4). A survey of the history of China since 1800. (VII-B)

174 Japan

174A Japan to 1800 (4). (VII-B)

174B Japan Since 1800 (4). (VII-B)

176 Topics in Pre-Modern Asia (4). Topics vary.

177 Topics in Modern Asia (4). Topics vary. (VII-B)

AFRICAN HISTORY

178 Africa from Colonial Times to Independence (4). Broad examination of relations between Europe and Africa from the precolonial era to the present. Topics include the slave trade, the rise of nationalism, and the development of anticolonial resistance movements. (VII-B)

SPECIAL STUDIES. Topics with particular methodological foci. Content varies; departmental office has quarterly list of topics. May be repeated for credit.

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)

186 Special Studies in History of Science (4) (IV)

187 Special Studies in Legal History (4)

HISTORICAL RESEARCH FOR HISTORY MAJORS

190 Colloquium (4) F, W, S. Specialized courses dealing primarily with close reading and analysis of secondary works; required reports and papers (critical essays). Each colloquium reflects the instructor's intellectual interests and is conducted as a discussion group. Limited to 15 students. Prerequisites: junior/senior standing and history major, or consent of instructor. Content varies. May be repeated for credit.

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. Each research seminar is offered in a quarter following a History 190 colloquium and is related to the colloquium's subject. Prerequisites: History 190 in the preceding quarter; junior or senior standing; and History major or consent of instructor. May be taken for credit six times as topic varies.

195 Arms Control Simulation (4). A history of contemporary efforts to achieve arms control and a simulation of negotiations involving the delegations of two large nations.

198 Directed Group Study (4). Special topics through directed reading. Paper required. Prerequisites: consent of instructor; a minimum of two students must enroll.

199 Independent Reading (4). Investigation of special topics through directed reading. Paper required. Prerequisite: consent of instructor.

Graduate Courses

In addition to the following courses, graduate students in History might find these Humanities courses of special interest: Humanities 210 (Approaches to Linguistic Study); Humanities 220 (Literary Theory); and Humanities 230 (Philosophical Analysis).

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. Same as Humanities 200.

202A-Z Proseminar (4-4) F, W. Topical courses devoted to the literature of a broad historical subject, e.g., the absolutist state, the French Revolution, comparative industrialization, women's history.

203A-Z First-Year Research Seminar (4-4) W, S. Course devoted to research and writing on questions connected with proseminar topics. Normally required of all entering graduate students. Substantial research paper required. Prerequisite: History 202.

204A-B Second-Year Research Seminar (4-4) F, W. 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.

COLLOQUIA

210A-B-C The Literature and Interpretations of Ancient History (4-4-4). Historiography of Antiquity (Ancient Near East, Greece, and Rome to A.D. 395). Selected problems, philology and social thought, and directions of contemporary research. Emphasis on development of interpretations through scholarly dialogue.

220A-B-C The Literature and Interpretations of Early-Modern Europe.

220A Society and Economy (4)

220B Political History (4)

220C Intellectual and Cultural History (4)

230A-B-C-D The Literature and Interpretations of Modern European History (4-4-4-4)

230A Britain (4)

230B France (4)

230C Germany (4)

230D Russia (4)

250A-B-C The Literature and Interpretations of Latin American History (4-4-4). **250A:** Colonial Period; **250B:** Nineteenth Century; **250C:** Twentieth Century.

260A-B-C The Literature and Interpretations of American History (4-4-4)

260A Seventeenth and Eighteenth Centuries (4)

260B Nineteenth Century (4)

260C Twentieth Century (4)

280A-B-C Seminar in Southern History (4-4-4) F, W, S. Analysis of major works on the history of the southern United States, focusing on social groups, class and race relations, economic development, culture, and politics. An intercampus course taught jointly by participating faculty from the Irvine, Riverside, and San Diego campuses. Prerequisite: UCI participants must obtain consent of one of the UCI instructors. May be used to fulfill the First-Year Research Seminar requirement.

282 Seminar in Medieval and Early Modern British History. (4) F, W, S. An intercampus seminar in Medieval and Early Modern British history that is taught both at the Huntington Library in San Marino and at UCI. Focuses on the development of thesis statements, thesis chapters, and/or publishable articles. May be repeated for credit.

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.

SPECIAL STUDIES

290 Special Topics (4-4-4) F, W, S. Lectures, readings, and discussion on subjects more limited in scope than those included in the year-long colloquia.

291 Directed Reading (4-4-4) F, W, S. Prerequisite: consent of instructor.

295 Special Methods (4-4-4) F, W, S. Development of particular research skills.

298 Experimental Group Study (4-4-4) F, W, S. Open to four or more students. Prerequisite: consent of instructor.

299 Dissertation Research (4-4-4) F, W, S. Prerequisite: consent of instructor; advancement to Ph.D. candidacy.

399 University Teaching (4-4-4) F, W, S. Required of and limited to Teaching Assistants.

Special Programs in the Humanities

Undergraduate Major in Humanities

The interdisciplinary major in Humanities is one of the many options available to a student who wants to select a major in the School of Humanities. As such, the major in Humanities is on a par with the major in Spanish, the major in Classics, the major in Philosophy, and other majors in the School. The major in Humanities accommodates students who want to organize their undergraduate education around a humanistic perspective on a topic, a field, or a problem which is interdisciplinary in scope (e.g., Literature and Politics in Twentieth-Century America; The Problem of Community; Social and Religious Thought in the Age of the Reformation). The student enters the program at the end of the sophomore year and, in consultation with the Humanities Major Committee, devises an individually tailored set of "major requirements," not all of which need be offered in the School of Humanities. The Committee will assign an advisor on the basis of the student's own preference, if possible. At the end of the senior year the student will prepare, under the advisor's supervision, a long paper in the area of the special major. This requirement is satisfied by taking Humanities 199. A student majoring in the Humanities must also meet the regular School, UCI, and University requirements for graduation. Inquiries by third-quarter sophomores should be addressed to the Senior Academic Counselor in the School's Office of Undergraduate Study.

Residence Requirement: At least five upper-division courses in Humanities required for the major must be completed successfully at UCI.

Emphasis in Women's Studies

240 Humanities Office Building; (714) 856-4234
Francesca Cancian, **Director**

Beginning fall 1992, a B.A. degree in Women's Studies, as well as a minor, will be offered. Information is available from Joan Ariel, Academic Coordinator, telephone (714) 856-4970.

Affiliated Faculty

Harold Baker: Comparative literature, critical theory, nineteenth-century, pastoral
Anne Bermingham: Modern European art, American art, history of photography
Daniel Brewer: Eighteenth- and nineteenth-century French literature
Michael L. Burton: Cognitive anthropology, economic anthropology, cross-cultural comparisons, gender roles
Francesca M. Cancian: Sociology, social movements, social change, theory, family and friendship, gender roles
David Carroll: Literary theory, twentieth-century French literature
Kenneth Chew: Social demography, urban sociology, family and life course studies
Michael P. Clark: Colonial American literature, critical theory
Alison Clarke-Stewart: Development in early childhood and the effects of variation in the social environment
Anne J. Cruz: Golden Age Spanish literature, comparative literature
Kate Davy: Feminist theory and criticism in the arts, theatre film and performance art
Cornelia Dayton: Women in the United States; women and the law, 1600-1860
Ana Paula Ferreira: Portuguese, Brazilian, and Lusophone African literature
Anne Friedberg: Film history and theory, film and postmodernism, avant-garde and experimental film
Suzanne Gearhart: Seventeenth- and eighteenth-century French literature, philosophy and literature
Wendy A. Goldberg: Developmental psychology, social policy, biopsychology of parenting, family system
Ellen Greenberger: Developmental psychology, adolescence and social institutions, work and the family, social policy

Lucía Guerra-Cunningham: Latin-American literature, literary theory, women's studies
Gail Hart: Eighteenth- and nineteenth-century German literature, drama, fictional prose
María Herrera-Sobek: Latin-American and Chicano folklore, bilingualism
Renée Riese Hubert: Literature and fine arts, modern poetry, surrealism, Romanticism, comparative literature
Michael P. Johnson: American social and political history
Gregory S. Kavka: Social and political philosophy
Mary Ritchie Key: Historical and comparative linguistics, American Indian languages, sociolinguistics, nonverbal communication
Meredith Lee: Lyric poetry, Goethe and eighteenth-century literature, German-Scandinavian literary relations
Karen Leonard: Social history of India, comparative history of women and the family, Asian-American social history
Nancy Leveson: Information systems design; software safety and reliability, programming language semantics, database systems
Catherine Lord: Art, photography, and design; arts and cultural politics
Julia Lupton: Shakespeare, Renaissance literature, psychoanalytic and feminist theory
Juliet Flower MacCannell: Eighteenth-century French literature, modern semiotics, comparative literature
Penelope Maddy: Logic, philosophy and foundations of mathematics
Lillian Manzor-Coats: Latin-American literature, literature and art
Christia Mercer: Renaissance and early modern philosophy, philosophy of art, philosophical feminism
Robert Moeller: European women, women in modern Germany
Alejandro Morales: Latin-American and Chicano literature, film studies
Jane O. Newman: Sixteenth- and seventeenth-century English, French, German, Italian, and neo-Latin literature; feminist theory, new historicism and cultural materialism, genre theory, drama, epic, pastoral
Robert Newsom: Victorian literature, theory of fictions
Patricia A. O'Brien: modern French social history
Julian Palley: Modern Spanish literature
Mark S. Poster: Modern European intellectual history
Leslie W. Rabine: Nineteenth-century French literature, women's studies
Eric Rentschler: German film, modern German literature, German comedy
Judith Rosener: Political analysis, citizen participation, gender roles and management
John Carlos Rowe: American literature, modern literature, critical theory, comparative literature
Gabriele Schwab: Modern fiction, critical theory
John H. Smith: Eighteenth- and nineteenth-century German literature and intellectual history, literary theory
Aliko Songolo: French African and Caribbean literature
Amy Dru Stanley: Society and culture in nineteenth-century America, history of women and gender
Sally Stein: History of photography and mass media
William Thompson: Psychology and law, criminal justice, human judgment and decision making, use of social science in appellate litigation
Carole Uhlaner: Canadian politics, voting behaviors
Alladi Venkatesh: Household consumption, behavior, marketing theory and macromarketing
Gary Watson: Ethical theory, philosophy of the mind, political philosophy
Carol Whalen: Developmental psychopathology, childhood behavior disorders, child therapies, health psychology
Linda Williams: Film history, theory and genre, women and film, feminist theory, mass culture
Pauline Yu: Classical Chinese poetry and poetics, comparative literature

The Women's Studies Emphasis of the Humanities major is designed to provide for the systematic, multicultural inquiry into the relationship of women to culture and society. As an interdisciplinary course of study, the Emphasis in Women's Studies offers an opportunity for reflection upon these relationships from a variety of perspectives and from the broadest point of view. Courses focus on the cultural role of women; women's history, women's socioeconomic condition, and cross-cultural women's literature, as all of these have been conceived traditionally and as they are currently undergoing change in the modern world.

The value of pursuing this Emphasis at this time will continue to increase as women come more and more to take positions of

decisionmaking and leadership in determining the future shape and direction of cultural, social, and political life. The Emphasis equips students with the proper critical tools for accomplishing the historically unprecedented tasks with which they are faced in contemporary life.

Career Opportunities

The degree in Humanities with an Emphasis in Women's Studies affords the student several options in diverse career fields in both the public and private sectors: leading universities have begun to offer graduate training in women's studies; businesses and corporations, as more women join the workforce, are discovering needs for specialists in women's studies; and the growth of women's organizations, women's research centers, and women's resource organizations across the country and around the world (including the United Nations) indicate that opportunities for people with backgrounds in women's studies are growing and should continue to grow in the foreseeable future.

Requirements for the Bachelor's Degree

University Requirements: See pages 50–53.

School Requirements: See page 148.

Program Requirements:

Humanities 55A, 55B, 55C; two courses from *each* of the following: Humanities 170, 171, 172; Humanities 173; one additional course from Humanities 170, 171, 172, 173, 174; Humanities 155; Humanities 199 in Women's Studies.

Residence Requirement: At least five upper-division courses required for the Emphasis must be completed successfully at UCI.

Program Requirements for the Minor:

Humanities 55A, 55B, 55C; Humanities 172; three courses from Humanities 170, 171, 173, 174.

Residence Requirement: At least four upper-division courses required for the minor must be completed successfully at UCI.

Courses in Women's Studies

Lower-Division

Humanities 50 Issues in Contemporary Feminism: Colloquium Series (4). Introduction to issues related to women and gender in contemporary life. Feminist scholarship offers multidimensional theoretical and analytical perspectives on the relationship of women and gender to culture and society. Presents a variety of issues from an academic perspective.

Humanities 55A Women in History (4). Women's experience and the use of gender as an analytic category in the literature of modern women's history. May be repeated for credit as topic varies. Same as History 12. (IV, VII-A)

Humanities 55B Women in Literature (4). Surveys the role of women in literature as authors, subjects, and readers. Generally emphasizes recent (i.e., eighteenth-, nineteenth-, and twentieth-century) texts, with some attention to literatures outside the European and Anglo-American traditions. (IV, VII-A)

Humanities 55C Feminist Theory (4). Surveys basic texts concerning the role of femininity in Western ideologies. Students are introduced to the classics of feminist thought. (IV, VII-A)

Upper-Division

Titles of individual courses listed under Humanities 170–174 will vary in accordance with their cross-listing.

Humanities 139 Advanced Expository Writing: Topics in Women's Studies (4). Practice in writing clear and effective prose. Several essays of varying lengths, totaling at least 4,000 words. Prerequisites: satisfaction of lower-division writing requirement and junior standing.

Humanities 155 Special Topics in Women's Studies (4). Designed to provide students with an opportunity to do advanced work in women's studies. May be repeated for credit when topic changes.

Humanities 170 Women's Studies: Literature and Language. These courses are cross-listed with offerings from departments of literature and language when suitable; they include courses from disciplinary literature and linguistic departments and programs such as East Asian Languages and Literatures, French, German, English and Comparative Literature, and Spanish.

170CA Undergraduate Seminars in Literary Theory and Practice (4) F, W, S.

170CB Undergraduate Lectures in Comparative Literature (4) F, W, S, Summer. Same as English and Comparative Literature CL103.

170CLA Topics in Classical Civilization (4). Same as Classics 170.

170CD The Interdisciplinary Course (4) F, W, S, Summer. Same as English and Comparative Literature CL104.

170EC Topics in Chinese Literature and Society (4). Same as East Asian Languages and Literatures 110. May be taken for credit three times as topic varies. (VII-B)

170EJ Topics in Japanese Literature and Society (4). Same as East Asian Languages and Literatures 120. May be taken for credit three times as topic varies. (VII-B)

170FA Topics in French Literature and Culture (4) F, W, S. Same as French 150.

170GA Topics in German Literature 750–1750 (4). Same as German 117. (VII-B)

170GB Studies in the Age of Goethe (4). Same as German 118. (VII-B)

170GC Studies in Nineteenth-Century German Literature (4). Same as German 119. (VII-B)

170GD Studies in Twentieth-Century German Literature (4). Same as German 120. (VII-B)

170GE Topics in German Literature (4). Same as German 130.

170GF Writing About Literature (4). Same as German 139.

170GG Topics in Literary Theory and Criticism (4). Same as German 140.

170GH German Literature in Translation (4) F, W, S. Same as German 150A-B-C. (VII-B)

170GJ German Cinema (4). Same as German 160. (VII-B)

170LA Sociolinguistics (4). Same as Linguistics 168A.

170RA Russian Literature 1800–1880 (4) F. Same as Russian 150A.

170RB Contemporary Russian/Soviet Literature (4) S. Same as Russian 150C.

170SA-SB Chicano Literature (4-4). Same as Spanish 133A-B. (VII-A)

170SC Hispanic Civilization (4). Same as Spanish 110A-B-C. (Spanish 110A-B: VII-B; 110C: VII-A)

170SD Selected Topics in Spanish Literature (4). Same as Spanish 185. (VII-B)

170TA Undergraduate Seminars in Literary Theory (4) W, S

Humanities 171 Women's Studies: History. These courses deal with women and gender from a historical focus. They are cross-listed with upper-division courses in history when the focus is on women and gender.

171A Women and Gender Relations in the United States: United States Women to 1820 (4). Same as History 150A. (VII-A)

171B Women and Gender Relations in the United States: United States Women: 1820–1980 (4). Same as History 150B. (VII-A)

171C Special Studies in Social History (4). Same as History 180.

171D Colloquium (4). Same as History 190.

171E-F Senior Seminar (4-4). Same as History 192A-B.

Humanities 172 Women's Studies: Social Sciences and Social Ecology. These courses are cross-listed with courses offered in social sciences when the topics covered relate to women and gender.

172C Work and the Family (4). Same as Social Ecology S154.

172D Community Research (4). Same as Sociology 111.

172E Sociology of Peace and War (4). Same as Sociology 178.

172F Cross-Cultural Studies of Gender (4). Same as Anthropology 121D. (VII-B)

172G Development of Sex Differences (4). Same as Social Ecology S148.

172H Sociology of Gender (4). Same as Sociology 161.

172J Women in Asia (4). Same as Anthropology 163G. (VII-B)

Humanities 173 Women's Studies: Philosophy. These courses deal with philosophical issues related to feminism, women, and/or gender.

173A Philosophy and Sexual Politics (4). Same as Philosophy 185.

Humanities 174 Women's Studies: Women and the Arts. These courses focus on women and gender in relation to the arts, including film and fine arts.

174A Studies in Film Genre (4). Same as Film Studies 112.

174B Classical Film Theory (4). Same as Film Studies 110A.

174C Contemporary Film Theory (4). Same as Film Studies 110B.

Humanities 199 Directed Research (varies). Directed research for senior Humanities majors. Prerequisite: consent of instructor.

Minor in Global Peace and Conflict Studies

734 Social Science Tower; (714) 856-6410

Keith Nelson, **Director**

Faculty

Dennis Aigner, Graduate School of Management
 Peter Bowler, School of Biological Sciences
 Russell Dalton, School of Social Sciences
 Joseph DiMento, Program in Social Ecology
 John Graham, Graduate School of Management
 Lawrence Howard, School of Social Sciences
 Karl Hufbauer, School of Humanities
 Jon Jacobson, School of Humanities
 Gregory Kavka, School of Humanities
 Jon Lawrence, School of Physical Sciences
 Sung-Chull Lee, School of Social Sciences
 Franklin Long, School of Social Sciences
 and Program in Social Ecology
 Herbert Lehnert, School of Humanities
 Guy de Mallac, School of Humanities
 Julius Margolis, School of Social Sciences
 Richard McCleary, Program in Social Ecology
 Calvin McLaughlin, School of Biological Sciences
 Seymour Menton, School of Humanities
 Keith Nelson, School of Humanities
 Riley Newman, School of Physical Sciences
 Margot Norris, School of Humanities
 Frederick Reines, School of Physical Sciences
 Shawn Rosenberg, School of Social Sciences
 Sherwood Rowland, School of Physical Sciences
 Roland Schinzinger, School of Engineering
 Caesar Sereseres, School of Social Sciences
 Robert Scheer, School of Social Sciences
 and Program in Social Ecology
 Etel Solingen, School of Social Sciences
 Rein Taagepera, School of Social Sciences
 John Whiteley, Program in Social Ecology

The minor in Global Peace and Conflict Studies is an interdisciplinary curriculum which addresses international violence; the threat of global war; and paths to world-wide cooperation in meeting military, economic, and environmental threats to global security. The minor is available through the School of

Humanities, the Program in Social Ecology, and the School of Social Sciences. The minor and its courses, however, are open to all UCI students.

Participants in the minor must complete the equivalent of ten courses, beginning in the sophomore year with an introductory series and culminating with the senior Peace and Conflict Seminar. The student selects the remainder of the courses comprising the minor from an approved list of upper-division courses and must organize these choices in consultation with a panel of the participating faculty into a coherent interdisciplinary program complementary to the student's major.

Requirements for the Minor:

Four lower-division courses: History 11 (Introduction to Peace and Conflict), Political Science 41A (Introduction to International Relations), Political Science 42A (Nuclear Arms and Global Conflicts), Physics 16 (Physics of Global Issues).

Four relevant upper-division courses: Among those usually offered are: Economics 148A-B (Political Economy of National Defense); History 133A-B-C (European International History), History 146B (American Foreign Relations Since World War II), History 195 (Arms Control Simulation); Philosophy 182 (Issues in Social Philosophy); Political Science 142A (U.S. Foreign Policy: The Cold War Years), Political Science 142B (U.S. Foreign Policy: National Security Decision Making), Political Science 143C (Arms Control and International Security), Political Science 143D (Global Security and Cooperation), Political Science 152D-E (Soviet Society and Politics); Social Ecology S178, S179, S180 (Social Ecology of Peace); and Sociology 178 (Sociology of Peace and War).

(With approval of the Global Peace and Conflict Studies faculty, a relevant lower-division course may be substituted for one of the upper-division courses.)

The Senior Seminar on Peace and Conflict: Humanities 181A-B-C (same as Social Sciences 184A-B-C and Social Ecology E185A-B-C). Students attend and subsequently discuss weekly forum talks given by scholars from a variety of institutions on topics related to peace, conflict, and global cooperation. In the first two quarters of this sequence students prepare for a research paper to be written in the third quarter, which confers upper-division writing credit. The three quarters of the Seminar sequence carry respectively, two, two, and four units of credit.

Further information concerning the minor is available in the Global Peace and Conflict Studies Office.

Minor in Latin American/Chicano Studies

363 Humanities Office Building; (714) 856-4234

Jaime E. Rodríguez, **Director**

Affiliated Faculty

Judith Baca, Department of Studio Art
 Richard Barrutia, Department of Spanish and Portuguese
 Juan Bruce-Novoa, Department of Spanish and Portuguese
 Frank Cancian, Department of Anthropology
 Leo Chávez, Department of Anthropology
 Ana Ferreira, Department of Spanish and Portuguese
 Robert Garfias, Department of Anthropology
 Lucía Guerra-Cunningham, Department of Spanish and Portuguese
 María Herrera-Sobek, Department of Spanish and Portuguese
 Karen Leonard, Department of Anthropology
 Fred Ludwig, Department of Pathology
 Lillian Manzor-Coats, Department of English and Comparative Literature
 Seymour Menton, Department of Spanish and Portuguese
 Duane Metzger, Department of Anthropology
 Ricardo Miledi, Department of Psychobiology
 Alejandro Morales, Department of Spanish and Portuguese
 Héctor Orjuela, Department of Spanish and Portuguese

Juan Ríos, Department of Dance
 Eloy Rodríguez, Departments of Developmental and Cell Biology and Ecology and Evolutionary Biology
 Jaime E. Rodríguez, Department of History
 Kimbal Romney, Department of Anthropology
 Arthur J. Rubel, Department of Family Medicine and School of Social Sciences
 Caesar Sereseres, Department of Politics and Society
 Luis Suárez-Villa, Program in Social Ecology
 Steven Topik, Department of History
 Robert Villaverde, Department of Civil Engineering
 Luis P. Villarreal, Department of Molecular Biology and Biochemistry
 Juan Villegas, Department of Spanish and Portuguese
 Douglas R. White, Department of Anthropology

The minor in Latin American/Chicano Studies is an interdisciplinary curriculum designed to develop in students an awareness, knowledge, and appreciation of Latin American and Chicano issues in the areas of language, history, culture, literary studies, sociology, anthropology, political science, health, and folk medicine, and creative accomplishments in art, music, dance, and drama. Its goal is to promote not only knowledge of two important population groups, but also interracial, interethnic, intercultural, and international understanding. The minor is housed in the School of Humanities and is open to all UCI students.

Students in the minor follow one of two tracks, the Latin American track or the Chicano track, and must complete eight courses. In addition, students must fulfill a language requirement of two years of college-level Spanish or Portuguese (or equivalent).

Requirements for the Latin American Track:

Spanish 2A-B-C (Intermediate Spanish) or Portuguese 140A-B through 145 (three courses, exclusive of those used to meet the minor requirements), or equivalent knowledge of Spanish or Portuguese.

One course in Latin American literature (Spanish-American or Luso-Brazilian) selected from: Spanish 101D (Introduction to Latin American Literature), 130A (Spanish-American Prose Fiction 1830-1920), 130B (Spanish-American Prose Fiction 1920-1950), 130C (Spanish-American Prose Fiction 1950 to Present), 131A (Spanish-American Poetry), 131B (Spanish-American National Literature), 131C (Spanish-American Theatre), 150 (Spanish-American Literature in Translation), 160 (Topics in Hispanic Film Studies, when topic is on Latin America), 186 (Selected Topics in Latin American Literature); Portuguese 140A-B (Luso-Brazilian Prose Fiction), 142 (Luso-Brazilian Short Story), 143 (Luso-Brazilian Poetry), 145 (Luso-Brazilian Theatre), 190 (Individual Studies).

One course in Latin American history selected from: History 42A (Pre-Columbian Civilizations and European Colonization, 1200-1750), 42B (Independence and the Nineteenth Century), 42C (Twentieth Century), 161A (Mexico: Indian and Colonial Societies), 161B (Mexico: Nineteenth Century), 161C (Mexico: The Mexican Revolution, Twentieth Century), 162 (Brazil), 163 (Central America and the Caribbean), 166 (United States—Latin American Relations), 190 (Colloquium, when topic is on Latin America).

One course in Latin American social sciences selected from: Political Science 153A (Latin American Politics), 145A (Central America and U.S. Policy); Anthropology 125A (Economic Anthropology), 125X (Immigration in Comparative Perspective), 162A (Peoples and Cultures of Latin America), 162N (Rural Mexico); Comparative Culture 140F (Latin American Culture); Social Ecology E136 (Social Ecology of the Borderlands).

One course in Chicano Studies selected from: Spanish 110C (Hispanic Civilization, when topic is on Chicano history or culture), 133A-B (Chicano Literature), 134 (Chicano Culture), 186

(Selected Topics in Latin American Literature, when topic is on Chicano literature).

Three courses in Latin American Studies selected from: any of the courses listed above in the literature, history, and social sciences requirements; Spanish 50C (The Individual and Society in Hispanic Literature), 110A-B-C (Hispanic Civilization, when the topic is on Latin American countries); Portuguese 141 (Luso-Brazilian Civilization); Linguistics 166B (Indian Languages of the Americas); 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).

One seminar course on a topic related to Latin American studies selected from: History 190 (Colloquium); Spanish 190 (Individual Study); a Special Topics course in Anthropology, Political Science, or Sociology.

Requirements for the Chicano Track:

Spanish 2A-B-C (Intermediate Spanish) or Portuguese 140A-B through 145 (three courses, exclusive of those used to meet the minor requirements), or equivalent knowledge of Spanish or Portuguese.

One course in Chicano history or culture selected from: Spanish 110C (Hispanic Civilization, when topic is on Chicano history or culture), 134 (Chicano Culture); History 198 (Directed Group Study, when topic is on Chicano history).

One course in Mexican history selected from: History 161A (Indian and Colonial Societies), 161B (Nineteenth Century), 161C (The Mexican Revolution—Twentieth Century).

One course in Chicano literature: Spanish 133A-B (Chicano Literature).

One course in Mexican literature: Spanish 186 (Selected Topics in Latin American Literature, when topic is on Mexican literature).

Three courses in topics related to Chicano Studies chosen from outside the School of Humanities, selected from: Political Science 126A (Mexican-Americans and Politics); Comparative Culture 140D (Chicano Culture); Social Ecology E136 (Social Ecology of the Borderlands).

One seminar course on a topic related to Chicano Studies selected from: History 190 (Colloquium); Spanish 190 (Individual Study); Biological Sciences 197A-B-C (Special Study in Biological Sciences); a Special Topics course in Anthropology, Political Science, or Sociology.

Residence Requirement for the Minor (both tracks): Four upper-division courses must be successfully completed at UCI.

Concentration in Medieval Studies

200 Humanities Office Building; (714) 856-6712

Edgar T. Schell, **Coordinator**

The concentration in Medieval Studies allows undergraduate students in the Schools of Humanities and Fine 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 and Comparative Literature, History, Philosophy, and the Fine Arts.

Students in the concentration must complete at least two quarters of Humanities 110, the Core Course in Medieval Studies. These courses are interdisciplinary, team-taught examinations of such topics as The Plague, The Dark Ages, Medieval Liturgy and Theater, Medieval Women, and Medieval Sign

Theory. 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.

Concentration in Religious Studies

144 Humanities Office Building; (714) 856-6740
Albert O. Wlecke, Coordinator

The undergraduate concentration in Religious Studies encourages the student to examine religion and religious phenomena in the context of the several disciplines represented in the Schools of Humanities, Fine Arts, and Social Sciences. The concentration, which is available with any major offered by these three Schools, is, for the most part, made up of courses already offered in the undergraduate curriculum; it allows the student to organize these courses, however, into a program complementary to the student's major. It is the objective of the concentration that participating students expand their appreciation and understanding of religion in the context of their own major discipline while also developing critical abilities in the area of religious studies in its own right. While the concentration takes as its subject all religion and religious phenomena and courses are offered in non-Western religious subjects, the academic specialties of the majority of the contributing faculty lie in Western traditions.

Students electing the concentration are required to take eight one-quarter courses from those approved for the concentration. The courses are gathered into three generic categories: religious theory and comparative religions, canonical literature, and topics in religious studies. Students take two courses from each category as well as two additional courses from among those approved for the concentration.

3-2 Program with the Graduate School of Management

Outstanding students who are interested in a career in management may wish to apply for entry into the Graduate School of Management's 3-2 Program. Students normally apply for this program early in their junior year. See the Graduate School of Management section for additional information.

Courses in Humanities

Lower-Division Courses

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 elects an interdisciplinary major in Humanities.

Humanities 1A-B-C The Humanities Core Course (8-8-8) F, W, S. A freshman course required of all Humanities majors. Each year the course deals with problems of concern to the humanistic disciplines (history, literature, philosophy), emphasizing the careful reading of major texts that bear on these problems and developing the ability to think clearly and write well about the issues they raise. A writing program is integral to the course and counts for half the grade each quarter. Students held for Subject A will earn an additional two units of workload credit, and *must* take the course for a letter grade. (I, IV, VII-A)

Humanities 10 Humanities Core Course Adjunct (0) F, W, S. For students who need to develop and refine their academic skills to meet the rigorous demands of the Core Course. Using the reading and writing assignments of the Core Course, students are assisted in study skills,

vocabulary development, critical reading, essay writing, and test-taking preparation. Four units of workload credit only. Corequisite: concurrent enrollment in the Humanities Core Course.

NOTE: Humanities 20A-B-C-D through 29 are for students who have been admitted to UCI and whose scores on the ESL Placement Test indicate the need for additional work in English as a second language.

Humanities 20A-B-C-D Writing for Students for Whom English Is a Second Language (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 ESL Placement Test. Prerequisite: ESL placement examination.

Humanities 21A ESL Speaking and Listening (2). Basic listening and speaking skills in five fundamental areas: pronunciation, lecture comprehension and discussion, academic oral reporting, informal interviewing, and nonverbal communication. Pass/Not Pass Only. Prerequisite: ESL placement examination. Primarily for graduate students.

Humanities 21B ESL Speaking and Listening (2). Further development of listening and speaking skills: oral reporting, panel presentation, functional/situational dialogue, and public argumentation and debate. Primarily for graduate students. Pass/Not Pass Only. Prerequisite: ESL placement examination.

Humanities 22A ESL 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. Prerequisite: ESL placement examination.

Humanities 22B ESL Reading and Vocabulary (2). Extensive reading with emphasis on long magazine and journal articles, short stories, textbook chapters, notetaking, and the interpretation of charts, diagrams, tables, and figures. Pass/Not Pass Only. Prerequisite: ESL placement examination.

Humanities 29 Special Topics in ESL (1-2). 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 ESL Director. May be taken more than once provided the topic changes.

Humanities 55A Women in History (4). Women's experience and the use of gender as an analytic category in the literature of modern women's history. May be repeated for credit as topic varies. Same as History 12. (IV, VII-A)

Humanities 55B Women in Literature (4). Surveys the role of women in literature as authors, subjects, and readers. Generally emphasizes recent (i.e., eighteenth-, nineteenth-, and twentieth-century) texts, with some attention to literatures outside the European and Anglo-American traditions. (IV, VII-A)

Humanities 55C Feminist Theory (4). Surveys basic texts concerning the role of femininity in Western ideologies. Introduction to the classics of feminist thought. (IV, VII-A)

Humanities 70 The Foundations of Nonviolence (4) F. An examination of the doctrine of nonviolence. Discussion both of its advocates in the philosophical/spiritual/political contexts, and of the case against nonviolence. Study of practical applications from the 1930s to the present, including resistance to Nazism, the Civil Rights Movement in the U.S., and the current nuclear age.

Humanities 75 Library Research Methods (2) F, W, S. Search strategy techniques relevant for library research at UCI and other academic institutions, with emphasis on application of these techniques to individual research interests. Recommended for, but not limited to, students with assigned papers for other classes.

Humanities 98 Issues in Humanities (2) F, S. Examines issues pertaining to the study of the humanities in the 1980s. Includes career and life options, graduate and professional schools, overview of skills, insights and advantages of humanities education. Pass/Not Pass Only.

Upper-Division Courses

Humanities 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.

Humanities H120A-B-C Honors Proseminar (4-4-4) F, W, S. An interdisciplinary Honors sequence organized around a single topic or problem designed to compare and contrast modes of analysis in history, literary studies, and philosophy. Variable topics. Required of participants in the Humanities Honors Program. Prerequisites: Humanities 1A-B-C; consent of instructor and the Humanities Honors Program Committee.

Humanities H139 Senior Honors Seminar (4) F. An interdisciplinary seminar for students in the Humanities Honors Program on problems in humanistic inquiry. Variable topics. Critical essays of varying lengths, totaling at least 4,000 words. Required of participants in Humanities Honors Program. Prerequisites: satisfaction of lower-division writing requirement; junior standing; consent of instructor or Honors Program Committee.

Humanities H140 Senior Honors Thesis (4) W. Directed independent research. Required of participants in the Humanities Honors Program. Prerequisite: consent of instructor or Honors Program Committee.

Humanities H141 Senior Honors Colloquium (4) S. Presentation and discussion of Senior Honors Theses. Emphasis on interdisciplinary reading and evaluation. Prerequisites: Humanities 140; consent of instructor or Humanities Honors Program Committee.

Humanities 155 Special Topics in Women's Studies (4). Designed to provide students with an opportunity to do advanced work in women's studies. May be repeated for credit when topic changes.

NOTE: See the Women's Studies section for complete course listings for Humanities 170–174.

Humanities 170 Women's Studies: Literature and Language. These courses are cross-listed with offerings from departments of literature and language when suitable; they include courses from disciplinary literature and linguistic departments and programs such as East Asian Languages and Literatures, French, German, English and Comparative Literature, and Spanish.

Humanities 171 Women's Studies: History. These courses deal with women and gender from a historical focus and they are cross-listed with upper-division courses in history when the focus is on women and gender.

Humanities 172 Women's Studies: Social Sciences and Social Ecology. These courses are cross-listed with courses offered in social sciences or social ecology when the topics covered relate to women and gender.

Humanities 173 Women's Studies: Philosophy. These courses deal with philosophical issues related to feminism, women, and/or gender.

Humanities 174 Women's Studies: Women and the Arts. These courses focus on women and gender in relation to the arts, including film and fine arts.

Humanities 181A-B Senior Seminar on Peace and Conflict, I, II (2-2) F, W. Students attend weekly seminar to discuss current global issues in conflict, cooperation, and peace. Weekly attendance at GPACS Forum also is required. Seminar utilized to analyze Forum presentations and to prepare senior research paper. **181A:** Prepare bibliography. **181B:** Prepare research proposal. Open only to seniors enrolled in the in the Global Peace and Conflict Studies minor. Same as Social Science 184A-B and Social Ecology E185A-B.

Humanities 181C Senior Seminar on Peace and Conflict III (4) S. Continuation of Humanities 181A-B. Students write a senior research paper under the direction of a faculty member. Attendance at the GPACS Forum also is required. Prerequisites: Humanities 181A-B. Open only to seniors enrolled in the in the Global Peace and Conflict Studies minor. Same as Social Science 184C and Social Ecology E185C.

Humanities 197 Individual Field Study (varying credit) F, W, S. Individually arranged field study. Prerequisite: consent of instructor.

Humanities 198 Directed Group Study (varying credit) F, W, S. Directed group study on special topics. Prerequisite: consent of instructor.

Humanities 199 Directed Research (varying credit) F, W, S. Directed research for senior Humanities majors. Prerequisite: consent of instructor.

Ph.D. with Interdisciplinary Emphasis in Humanities

The School of Humanities offers no degree called the Ph.D. in Humanities. However, some Ph.D. students in regular programs in the School may elect an interdisciplinary modification of their degree with the permission of the departments or programs concerned. Such students will do about 60 percent of their graduate work in a major field and about 40 percent in one or more minor fields. At least one of the student's courses will be in the Humanities series 200–230. Those interested in an interdisciplinary degree should contact the Associate Dean for Graduate Studies or the Graduate Advisor in their major department.

Emphasis in Critical Theory

252 Humanities Office Building; (714) 856-5583

Mark Poster, Director

Committee on Critical Theory

Ellen Burt, Department of French and Italian

David Carroll, Department of French and Italian

Michael Clark, Department of English and Comparative Literature

Lucia G. Cunningham, Department of Spanish and Portuguese

Jacques Derrida, Departments of English and Comparative Literature and French and Italian

Suzanne Gearhart, Department of French and Italian

Alexander Gellay, Department of English and Comparative Literature

Wolfgang Iser, Department of English and Comparative Literature

Murray Krieger, Department of English and Comparative Literature

Jean-Francois Lyotard, Department of French and Italian

David McDonald, Department of Drama

J. Hillis Miller, Department of English and Comparative Literature

Gonzalo Navajas, Department of Spanish and Portuguese

Jane Newman, Department of English and Comparative Literature

Mark Poster, Department of History; Director of the Critical Theory Institute

Leslie Rabine, Department of French and Italian

John Carlos Rowe, Department of English and Comparative Literature

Gabriele Schwab, Department of English and Comparative Literature

David Smith, Department of Philosophy

Juan Villegas, Department of Spanish and Portuguese

Andrzej J. Warminski, Department of English and Comparative Literature

Linda Williams, Program in Film Studies

An emphasis in Critical Theory, under the supervision of the Committee on Critical Theory, is available for doctoral students in all departments of the School of Humanities. Each Ph.D. student in Humanities may, with Committee approval, complete the emphasis in addition to the degree requirements of the student's 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: these consist of a sequence of courses in theory, a theoretical section on the qualifying examination, and a theoretical component in the dissertation. 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. In recognition of the interdisciplinary nature and goals of critical theory, the Committee on Critical Theory coordinates the activities of theorists from literary, historical, philosophical, and linguistic fields of study.

The emphasis consists of six graduate courses in critical theory: a three-course sequence offered in several departments and designed to introduce students to major theoretical issues and their historical settings; and at least three advanced seminars which build on the student's historical competence in order to probe topics of contemporary interest. Additional theory courses are offered by several departments.

The Critical Theory Institute (CTI) is an important resource for graduate students in Humanities doctoral programs. To acquaint Humanities graduate students with the most recent developments in the field, the CTI augments its teaching and research resources by inviting visiting theorists for varying periods of residence. The campus library has strong holdings in critical theory, and students also have access to the resources of the René Wellek Collection of the History of Criticism. The annual Wellek Library Lecture Series provides for an extended dialogue with major contemporary theorists.

Emphasis in the History and Philosophy of Science

323 Humanities Office Building; (714) 856-6317, 856-4234
Karl Hufbauer, **Director**

An emphasis in the history and philosophy of science is available for doctoral students in the Departments of History and Philosophy. The emphasis is administered by the Committee on the History and Philosophy of Science. Student participants must fulfill special course, examination, and dissertation requirements. Additional information concerning the emphasis is available from the director.

Graduate Courses

Graduate courses in Humanities are under the direction of the School's Associate Dean for Graduate Studies.

These courses are designed for all graduate students in the School of Humanities; however, Philosophy students may not count Humanities 230 as part of their degree program.

Humanities 200, 210, 212, 220, and 230 introduce study in five 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.

Humanities 200 History and Theory (4) F. Introduction to various approaches to historical inquiry. Speculative and critical history, as well as analytical history. Same as History 200A.

Humanities 210 Approaches to Linguistic Study (4) S. Linguistic theories and methods of language description, linguistic structure, language change, typology of grammars, theories of meaning. For students unfamiliar with basic principles of linguistics.

Humanities 220 Literary Theory (4) F. Introduction to criticism and aesthetics for beginning graduate students. Readings from continental, English, and American theorists.

Humanities 230 Philosophical Analysis (4). Fundamentals of philosophical analysis through application of techniques to selected problems in various "fields" of philosophy: ethics, philosophy of science, political philosophy, aesthetics, philosophy of religion.

Humanities 270 Advanced Critical Theory (4-4-4) F, W, S. Seminars on various topics in critical theory. Students should have taken introductory courses before enrolling in these seminars.

Humanities 291 Interdisciplinary Topics (4) F, W, S. Group of seminars and colloquia in interdisciplinary topics or in topics in a particular discipline designed for students in other disciplines.

Humanities 399 University Teaching (4-4-4) F, W, S. Required of and limited to Teaching Assistants.

Department of Philosophy

500 Humanities Office Building; (714) 856-6525
Gary Watson, **Department Chair**

Faculty

- Ermanno Bencivenga, Ph.D. University of Toronto, *Professor of Philosophy* (logic, history of philosophy, philosophy of language)
David M. Estlund, Ph.D. University of Wisconsin, *Assistant Professor of Philosophy* (ethics, political and social philosophy)
Gregory S. Kavka, Ph.D. University of Michigan, *Professor of Philosophy and Social Sciences* (social and political philosophy, ethical theory)
Joseph F. Lambert, Ph.D. Michigan State University, *Professor of Philosophy* (logic, philosophy of science, metaphysics)
Penelope Jo Maddy, Ph.D. Princeton University, *Professor of Philosophy* (logic, philosophy and foundations of mathematics)
A.I. Melden, Ph.D. University of California, Berkeley, *Professor Emeritus of Philosophy* (ethics, philosophy of mind, social and political philosophy)
Christia Mercer, Ph.D. Princeton University, *Assistant Professor of Philosophy* (renaissance and early modern philosophy, philosophy of art, philosophical feminism)
Alan Nelson, Ph.D. University of Illinois at Chicago, *Associate Professor of Philosophy* (philosophy of science, history of philosophy)
Terence D. Parsons, Ph.D. Stanford University, *Professor of Philosophy* (metaphysics, philosophy of language)
Nelson C. Pike, Ph.D. Harvard University, *Professor of Philosophy* (philosophy of religion, history of philosophy)
Gerasimos Santas, Ph.D. Cornell University, *Professor of Philosophy* (ancient philosophy, history of philosophy, ethics)
Martin Schwab, Ph.D. University of Bielefeld, *Assistant Professor of Philosophy and Comparative Literature* (aesthetics, philosophy of mind)
Guy Sircello, Ph.D. Columbia University, *Professor of Philosophy* (philosophy of art, philosophy of mind)
Brian Skyrms, Ph.D. University of Pittsburgh, *Professor of Philosophy* (philosophy of science, metaphysics)
David W. Smith, Ph.D. Stanford University, *Professor of Philosophy* (phenomenology, metaphysics, epistemology, existentialism)
Gary Watson, Ph.D. Princeton University, *Department Chair and Associate Professor of Philosophy* (ethical theory, philosophy of mind, political philosophy)
Peter Woodruff, Ph.D. University of Pittsburgh, *Associate Professor of Philosophy* (philosophy of logic, metaphysics)

Affiliated Faculty

- Francisco J. Ayala, Ph.D. Columbia University, *Founding Director of the Bren Fellows Program, Bren Chair, and Professor of Ecology and Evolutionary Biology and of Philosophy*
Gordon G. Globus, M.D. Tufts University, *Professor of Psychiatry and Human Behavior and of Philosophy*
Alain A. Lewis, Ph.D. Harvard University, *Associate Professor of Mathematical Behavioral Science and Philosophy*
Roger N. Walsh, Ph.D. University of Queensland, *Professor of Psychiatry and Human Behavior and of Philosophy*

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 morality and religion, 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 seem to be especially useful in legal education; indeed, many UCI Philosophy graduates have established fine records at top law schools. Former Philosophy students also have 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 Career Planning and Placement Center provides services to UCI 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 Planning and Placement section for additional information.

Undergraduate Program

Instruction in philosophy relies essentially upon discussion in which students are active participants. Wherever possible, therefore, classes are severely limited in size in order to permit sustained dialogues between student 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. Among these are courses in the philosophy of science and of art. The staff 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 majors in philosophy whose intention may be either to enter some professional school upon graduation (e.g., law) or to engage in graduate work in philosophy.

Requirements for the Bachelor's Degree

University Requirements: See pages 50–53.

School Requirements: See page 148.

Departmental Requirements for the Major

Philosophy 30A-B, 10, 12, and either 11 or 13; two of the following: Philosophy 140A-B, 145A-B, or 170A-B; four additional quarter courses from Philosophy 101-199. Students planning to go on to graduate school are strongly advised to take Philosophy 130A and 130B.

Residence Requirement: At least five upper-division courses required for the major must be completed successfully at UCI.

Departmental Requirements for the Minor

The minor consists of two portions: a lower-division portion and an upper-division portion. Both must be satisfied.

Lower division: Three courses selected from Philosophy 1, 4, 5, 30A or three courses selected from Philosophy 1, 6, 7, 30A or three courses selected from Philosophy 10, 11, 12, 13, 30A.

Upper division: Four courses in a given subfield of philosophy, some of which have been pre-approved by the Department and are included below:

Value theory (ethics, political/social, beauty), which includes Philosophy 111, 170A-B, 171, 172, 180, 181, 182, 184, and 190.

Epistemology, philosophy of mind, and philosophy of science, which includes Philosophy 127, 145A-B, 155, 156, 160, 162, and 186.

Metaphysics and philosophy of religion, which includes Philosophy 122, 140A-B, 195, and 196.

Logic and philosophy of language, which includes Philosophy 122, 130A-B, 132, 133, 134, 150, 151, and 165.

History of philosophy, which includes Philosophy courses numbered between 100 and 129 and Philosophy 181.

Other four-course sequences may be possible, subject to written permission by the Department. Such a sequence must consist of related courses in a coherent subfield.

Residence Requirement for the Minor: Four upper-division courses must be successfully completed at UCI.

Graduate Program

Students are encouraged to seek the counsel of any and all members of the Department whose recommendations the student would deem helpful. It is hoped that there will be a close intellectual relationship between graduate students and professors in order to provide the students with optimum conditions for philosophical development and to expedite their progress toward advanced degrees. In addition, the Department sponsors a series of colloquia each year. Participation in these colloquia is an important part of the graduate student's training.

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 the faculty each quarter about progress and any administrative or academic difficulties. Each student's overall record is evaluated by the Department each year, customarily during the first two weeks of April. When the student has satisfied residency, tools of research, logic, 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 Ph.D. (see below). Please refer to the Research and Graduate Studies 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 Graduate Studies and Research 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 Ph.D., thus allowing course work to 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.

The Ph.D. program is designed to take four years for the normally qualified student. In exceptional cases it may be possible to obtain the degree within three years. A Master's degree is not a prerequisite for the Ph.D. The following five items are requirements for the Ph.D. degree.

Tools of research, to be satisfied by demonstrating proficiency in a single appropriate foreign language* or by passing with a grade of B or better five to six courses at the graduate level in a discipline or disciplines outside of the Philosophy Department. Approval for the latter alternative will be granted by the Department only if, in its judgment, the courses form an integrated unit in light of the student's research interest.

*The foreign language examinations are administered by the Department of Philosophy. They are two hours in length and consist of translating, with the aid of a dictionary, passages from two authors. Students wishing information as to courses to prepare them for these examinations and dates when these examinations will be given should consult the Philosophy Department Office, 500 Humanities Office Building; telephone (714) 856-6525.

Logic Requirement: Students entering the program are expected to be familiar with elementary quantification theory and some natural deduction techniques. If they are not, students may take Philosophy 30A and 30B (no graduate credit is given for these courses) or arrange to cover equivalent material in individual study courses.

Students in the Ph.D. program must complete, with a grade of B or better, Philosophy 230A and 230B. The first of these is an introduction to elementary set theory, including Boolean operations, relations and functions, and cardinal and ordinal numbers. The second covers the basic proof theory and model theory of first order logic, including the deduction and replacement theorems, soundness, completeness, and Loewenheim-Skolem.

NOTE: Students without the necessary background may prepare for Philosophy 230A and 230B in an independent study course (Philosophy 299) with individual faculty members.

Portfolio of papers representing the student's best work in philosophy. The papers may be, or may be based upon, essays written for course work. Papers will be evaluated by the faculty for the purpose of determining whether or not the student is ready to seek admission to candidacy. The portfolio is due at the end of the fourth week of classes of the seventh quarter of residence.

Breadth Requirements. Historical Breadth: To be satisfied by receiving a grade of B or better in at least four courses covering at least three of the following five historical periods: Ancient, Medieval, Modern, Kant and nineteenth-century, and twentieth-century. **Field Breadth:** To be satisfied by receiving a grade of B or better in one course in metaphysics, one course in epistemology, and two courses in value theory. Both breadth requirements must be satisfied by the end of the seventh quarter of graduate study.

Advancement to candidacy and the writing of a dissertation. Upon successful completion of the above requirements, the student will apply for advancement to candidacy for the Ph.D. degree by filling out the appropriate forms and returning them to the Philosophy Department Office. A Candidacy Committee including at least one member from an academic area outside of the School of Humanities is then appointed by the Graduate Council. This Committee administers an oral Qualifying Examination to determine whether the student is qualified to begin work designed to lead to the completion of a dissertation.

Upon passing this oral examination, the student becomes a candidate for the Ph.D. degree. The Doctoral Committee appointed by the Graduate Council supervises the student's further course work and research, as well as the actual writing of the doctoral dissertation.

The defense of the dissertation. At a suitable point during the development of the dissertation, the Doctoral Committee administers an oral examination, the focus of which is the content of the dissertation itself. If at all possible, this examination will be given while the student is still in residence.

Courses in Philosophy

Lower-Division

1 Problems of Philosophy (4). An introduction to some basic philosophical problems, concepts, and methods. Emphasis on both discussion and writing. (IV)

2 Freshman-Sophomore Seminar in Philosophy (4). Introduction to the philosophical enterprise via a study of classical philosophical texts. Emphasis on classroom dialogue and critical writing. Open to upper-division students only with consent of instructor.

4 Introduction to Ethics (4). Selected topics from the history of ethics. Problems include the nature of the good life and the moral justification of conduct. (IV)

5 Contemporary Moral Problems (4). A study of some current moral issues, e.g., abortion, sexual morality, euthanasia, capital punishment, reverse discrimination, civil disobedience, and violence. (IV)

6 Philosophy and Psychoanalysis (4). An analysis of psychoanalytic theory and therapy, and of its significance for classical philosophical problems such as the mind-body problem, self-identity and self-deception, psyche and consciousness, innatism, and the origins of moral behavior. (IV)

7 Introduction to Phenomenology and Existentialism (4). A study of the doctrines of phenomenology and existentialism. Emphasis on their philosophical origins, contributions to traditional philosophical topics (e.g., metaphysics, epistemology, ethics) and influences on other disciplines (e.g., psychology, social science, literature, religion). (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). Major developments in Western Philosophy from Descartes to Kant. 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. Figures to be studied may include Russell, Moore, Wittgenstein, Quine, Heidegger, and Sartre. Philosophy 12 is strongly recommended as background. (IV)

14 Introduction to Asian Philosophies (4). Introduction to the philosophies of India, especially Yoga, Buddhism, and Vedanta, and of China, especially Confucianism and Taoism. Emphasis on exploring the relevance and practical application of these ideas in our own lives.

30 Introduction to Logic.

30A Introduction to Symbolic Logic I (4). An introduction to the symbolism and methods of the propositional calculus. Includes evaluation of arguments by truth-tables, natural deduction proofs, and semantic tableaux. (V)

30B Introduction to Symbolic Logic II (4). An introduction to first-order predicate calculus with identity. Techniques for showing invalidity and validity (both by natural deduction and semantic tableaux). Translation; axiomatic theories. Prerequisite: Philosophy 30A. (V)

31 Introduction to Inductive Logic (4). Philosophical questions about the foundations of scientific inference: the traditional problem of induction; the Goodman Paradox; the concept of cause; necessary and sufficient conditions and Mill's methods of inductive reasoning, probability calculus, different interpretations of probability; and their interaction in inductive reasoning. Prerequisite: Philosophy 30A. (V)

32 Applied Logic (4). Application of symbolic methods of the evaluation of argument and definition in natural language. Prerequisite: Philosophy 30B. (V)

60 Introduction to the Philosophy of Science (4). The characteristics and structure of the fundamental philosophical aspects of science. (IV)

95 Introduction to the Philosophy of Religion (4). A critical examination of some of the more important concepts used in Western theological literature. Topics include the nature and existence of God, miracles, and evil.

Upper-Division

NOTE: Unless otherwise specified, one course in philosophy is required as a prerequisite for each of the following courses. In special cases this requirement may be waived.

100 Ancient Philosophy (4). Selected topics from writings of Plato and Aristotle, such as Aristotle's criticism of Plato's metaphysics, ethics, or politics.

101 Plato (4). The central issues in Plato's Dialogues. Topics include the nature of Socratic questions, Socratic ethics, Platonic ethics and social philosophy, Plato's theory of ideas and his views on knowledge and perception, language and art. Philosophy 10 is strongly recommended as background.

102 Aristotle (4). The basics of Aristotle's philosophy: his philosophy of language, logic, epistemology, philosophy of nature, metaphysics, ethics, and philosophy of art.

105 Medieval Philosophy (4). A study of some of the major issues of concern to Medieval philosophers, e.g., universals, the nature and existence of God, faith and reason.

108 Continental Rationalism (4). A study of some of the philosophical texts of Descartes, Malebranche, Spinoza, and Leibniz. Philosophy 11 is strongly recommended as background.

109 Descartes (4). A study of Descartes' system of philosophy. Philosophy 11 or 12 recommended as background.

110 Leibniz (4). A study of Leibniz's system of philosophy. Philosophy 11 and 12 recommended as background.

111 Philosophy of Hobbes (4). A study of Hobbes' moral and political philosophy with focus on his *Leviathan*.

115 British Empiricism (4). Locke, Berkeley, and Hume with attention to the problems of substance, perception, and knowledge. Philosophy 12 strongly recommended as background.

117 Kant (4). Study of Kant's system of philosophy. Philosophy 12 is strongly recommended as background.

120 Nineteenth-Century Philosophy (4). A study of the major figures and movements in philosophy during the nineteenth century.

122 Frege (4). A study of Gottlob Frege's major philosophical writings on ontology, the foundations of mathematics and semantics.

125 Contemporary Analytic Philosophy (4). A selected topic such as the theory of perception, theory of action, free will, intentionality. May be repeated for credit.

127 Phenomenology (4). Foundations of phenomenology in Husserl. Backgrounds 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.

128 Existentialism (4). Heidegger and Sartre with their backgrounds in phenomenology. Philosophy 7 or Philosophy 127 strongly recommended as background.

130 Intermediate Logic. Philosophy 130A-B-C and Mathematics 150A-B-C may not both be taken for credit.

130A 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. (V)

130B Metalogic (4). Introduction to formal syntax (proof theory) and semantics (model theory) for first-order logic, including the deduction, completeness, compactness, and Loewenheim-Skolem theorems. Prerequisites: Philosophy 30B and 130A, or consent of instructor.

130C Effective Processes (4). Formal theory of effective processes, including recursive functions, Turing machines, and Church's Thesis.

Proof of the Goedel incompleteness theorem for arithmetic and the Church undecidability theorem for first-order logic. Prerequisite: Philosophy 130B or consent of instructor.

132 Topics in Mathematical Logic (4). Selected topics in advanced mathematical logic, e.g., proof theory, modal theory, recursive functions, set theory, combinatory logic. Prerequisite: Philosophy 130A-B or consent of instructor.

133 Philosophical Logic (4). Topics include free logic, modal logic, deontic logic, theory of descriptions, calculus of individuals. Topics vary from year to year. Prerequisite: Philosophy 130A-B. May be repeated for credit.

134 Philosophy of Logic (4). Philosophical questions raised by contemporary formal logic. Topics include the existence and nature of propositions, theory of entailment, descriptions and existential presuppositions. Prerequisite: Philosophy 130B or consent of instructor.

139 Writing Philosophy (4). Discussion of those aspects of writing that are of special importance in philosophy; special philosophical terminology, techniques for evaluating arguments, philosophical definitions and philosophical theories. A course requiring at least 4,000 words of assigned composition based upon philosophical readings. Philosophy majors are given admission priority. Prerequisites: satisfaction of lower-division writing requirement; junior standing or consent of instructor.

140A-B Metaphysics (4-4). A study of one or more of the problems of "first philosophy," e.g., substance, free will, abstract entities, identity.

145A-B Theory of Knowledge (4-4). 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 knowledge and belief, and the nature of truth and certainty.

150 Philosophy of Language (4). Selected topics in the philosophy of language, e.g., reference and speech act theories, theories of meaning. Same as Linguistics 141.

151 Advanced Philosophy of Language (4). More technical and intensive developments of topics introduced in Philosophy 150. Prerequisite: Philosophy 150 or consent of instructor. Same as Linguistics 142.

152 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. Prerequisites: At least one of the following: Linguistics 121, Philosophy 130B or 151, Mathematics 150, ICS 162, or consent of instructor. Same as Linguistics 143.

155 Philosophy of Mind (4). Issues connected with the concept of mind, e.g., the relation between mind and body, the self, personal identity, perception, belief, memory, motivation, desire, consciousness, the unconscious.

156 Philosophical Psychology (4). Selected topics such as theories of love, self-deception, the emotions, motive and intention, empathy, and psychoanalysis.

160 Philosophy of Science (4). A survey of some problems of central importance in contemporary philosophy of science. Philosophy 60 or completion of the ARIS program recommended (a computerized course in elementary logic) as background. (IV)

161 Science and Metaphysics (4). A study of a metaphysical topic on which the results of modern science have been thought to bear, such as causation, space/time, matter and substance, and realism.

162 Philosophical Foundations of Probability (4). Probability as limiting relative frequency, rational degree of belief or propensity. Bayesian inference. DeFinetti's theorem.

163 Topics in the Philosophy of Science (4). A detailed examination of either a single general topic in contemporary philosophy of science, or problems that arise in particular physical, biological, or social scientific theory. Prerequisite: Philosophy 60 or consent of instructor. Philosophy 160 and background in an appropriate science recommended.

165 Philosophy of Mathematics (4). A study of the nature of mathematical entities and mathematical knowledge. Prerequisite: Philosophy 130B or consent of instructor.

170A-B Ethics (4-4). A study of some of the problems of contemporary moral philosophy.

171 Ethical Issues in Biology (4). A study of the important ethical issues connected with the theory and practice of biological sciences. Topics may include the morality of abortion, the just distribution of medical resources, the use of animals for experimental purposes, and the sociobiology controversy.

172 Ethical Issues in Engineering (4). Application of ethical theory to moral problems confronted by engineers, scientists, managers, and others involved in engineering. Topics include exercise of conscience and free expression within corporations; basis of professional obligations to the public; role of values in safety decisions; ethics codes; whistleblowing. Case studies. Same as Engineering 192.

180 Political Philosophy (4). A study of some of the central problems in political philosophy, e.g., the justification of authority, the concepts of the ideal state, political liberty, political obligation, and social justice.

181 History of Political Philosophy (4). A study of some of the classical works of political philosophy. Readings from such figures as Plato, Hobbes, Locke, Rousseau, Mill, and Marx.

182 Issues in Social Philosophy (4). A study of one or more of the social issues of current concern, e.g., nuclear deterrence, obligations to future generations, sociobiology and human nature, world hunger.

183 Morality and Nuclear Weapons (4). A study of moral issues concerning nuclear war, nuclear deterrence, and the arms race. Readings from the works of moral philosophers, theologians, and nuclear strategists.

184 Philosophy of Law (4). Legal systems and the concept of law. Topics include the nature and purpose of law, the nature of authority, the relation between law and morality, law and political-economic systems.

185 Philosophy and Sexual Politics (4). Consideration of the philosophical issues raised by feminism, e.g., traditional views of male/female nature, whether sexual equality is desirable, standards for judging sexual relations. Same as Humanities 173A.

186 Rational Action Theory (4). Selected problems in the theory of rational choice and action, e.g., subjective utility theory, subjective probability theory, choice under uncertainty, Newcomb's problem, Prisoner's Dilemma, Ellsberg's paradox, and the Surprise Attack problem. Prerequisite: one college-level course in mathematics or logic.

190 Philosophy of Beauty (4). An introduction to the field of aesthetics via its principle historical manifestation, the philosophy of beauty. Intensive reading of selected classical philosophers of beauty such as Plato, Plotinus, Hume, Kant, Schopenhauer, and Santayana.

191 Theory of Art (4). Review and critique of one or more theories of art.

194 Problems in the Philosophy of Religion (4). Classical problems in philosophical theology. Topics may include the attributes of God; arguments for the existence of God; and the Divine Command Theory of Ethics. Philosophy 95 is strongly recommended as background.

195 Phenomenology of Religion (4). Study of the phenomenology of religious experience as analyzed by Schleiermacher, Otto, and Buber. Attention is given to the mystical literature of the Christian tradition and to classical theories of divine attribution.

196 Christian Mysticism (4). A study of some of the texts of classical Christian mystical writers, e.g., St. Teresa of Avila, St. John of the Cross, Julian of Norwich. Emphasis on the phenomenological features of mystical experience. Philosophy 95 or 11 recommended as background.

199 Directed Special Studies (4)

Graduate Lecture Courses

200 Ancient Philosophy (4). Selected topics from writings of Plato and Aristotle, such as Aristotle's criticism of Plato's metaphysics and ethics of politics. May be repeated for credit.

201 First-Year Seminar (4). A close examination of some standard works in history of philosophy, value theory, metaphysics, or epistemology. Emphasis on writing and student discussion and participation. Open to first-year Philosophy graduate students only. Strongly recommended for all first-year Philosophy graduate students.

205 Medieval Philosophy (4). A study 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 repeated for credit.

212 Modern Philosophy (4). Selected topics from the Rationalist and Empiricist philosophical literature. May be repeated for credit.

217 Kant (4). Study of Kant's system of philosophy.

225 Contemporary Analytic Philosophy (4). A selected topic such as the theory of perception, theory of action, free will and intentionality. May be repeated for credit.

227 Phenomenology (4). Foundations of phenomenology in Husserl. Backgrounds 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.

230 Intermediate Logic

230A 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.

230B Metalogic (4). Introduction to formal syntax (proof theory) and semantics (model theory) for first-order logic, including the deduction, completeness, and Loewenheim-Skolem theorems. Prerequisite: Philosophy 230A or consent of instructor.

230C Effective Processes (4). Formal theory of effective processes, including recursive functions, Turing Machines, and Church's thesis. Proof of the Goedel incompleteness theorem for arithmetic and Church undecidability theorem for first-order logic. Prerequisite: Philosophy 230B or consent of instructor.

232 Topics in Mathematical Logic (4). Selected topics in advanced mathematical logic, e.g., proof theory, modal theory, recursive functions, set theory, combinatory logic. May be repeated for credit.

233 Philosophical Logic (4). Topics include free logic, modal logic, theory of description, calculus of individuals. May be repeated for credit.

240A-B Metaphysics (4-4). A study of one or more of the problems of "first philosophy," e.g., substance, free will, abstract entities, and identity.

245A-B Theory of Knowledge (4-4). 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 knowledge and belief and the nature of truth and certainty.

250 Philosophy of Language (4). Selected topics in the philosophy of language, e.g., reference and speech act theories, theories of meaning.

255 Philosophy of Mind (4). Issues connected with the concept of mind, e.g., the relation between mind and body, the self, personal identity, perception, belief, memory, motivation, desire, consciousness, and the unconscious.

260 Philosophy of Science (4). A survey of some problems of central importance in contemporary philosophy of science.

262 Philosophical Foundations of Probability (4). Probability as limiting relative frequency, rational degree of belief or propensity. Bayesian inference. DeFinetti's theorem.

265 Philosophy of Mathematics (4). Key problems relevant to the philosophical foundations of mathematics. Logicism, Intuitionism, Formalism, the nature of mathematical entities, mathematical truth.

266 Philosophy of Physics (4). Philosophical issues in the foundations of physics. Instrumentalism and realism, convention in physical theory, causation, probabilistic laws.

267 Philosophy of Biology (4). Examination of basic conceptual and logical issues in biology. Reductionism, the status of biology as a science, teleological explanation, the logical structure of evolutionary theory, sociobiology.

268 Philosophy of Psychology (4). Philosophical problems in the foundations of psychological theorizing and the modeling of mind in cognitive psychology. The status of psychological mechanisms, the unconscious, mental states and processes, functionalism, problems of psychological explanations.

270A-B Ethics (4-4). A study of some of the problems of contemporary moral philosophy.

280 Political Philosophy (4). A study of some of the central problems in political philosophy, e.g., the justification of authority, the concepts of the ideal state, political liberty, political obligations, and social justice.

286 Rational Action Theory (4). Selected problems in the theory of rational choice and action, e.g., subjective utility theory, subjective probability theory, choice under uncertainty, Newcomb's problem, Prisoner's dilemma, Ellsberg's paradox, and the Surprise Attack problem.

290 Philosophy of Beauty (4). A study of the field of aesthetics via its principal historical manifestation, the philosophy of beauty. Intensive readings of selected classical philosophers of beauty such as Plato, Plotinus, Hume, Kant, Schopenhauer, and Santayana.

295 Philosophy of Religion (4). Selected topics include the nature and existence of God, mystical experience, miracles, etc.

Graduate Seminars

Since seminar and graduate course topics vary with the occasions on which they are offered, they may be repeated for credit. Open to graduate students and upper-division undergraduates by consent of instructor.

In addition to the following courses, graduate students in Philosophy might find these Humanities courses of special interest:

Humanities 200 (The Nature and Theory of History),
Humanities 210 (Approaches to Linguistic Study), and
Humanities 220 (Literary Theory).

203 Seminar in Ancient Philosophy (4). May be repeated for credit.

206 Seminar in Medieval Philosophy (4)

218 Seminar in Modern Philosophy (4). May be repeated for credit.

220 Seminar in History of Philosophy (4)

226 Seminar in Contemporary Philosophy (4). May be repeated for credit.

229 Seminar in Phenomenology (4)

235 Seminar in Logic (4). May be repeated for credit.

236 Logic Workshop (4). May be repeated for credit. Satisfactory/Unsatisfactory Only.

241 Seminar in Metaphysics (4)

246 Seminar in Theory of Knowledge (4). May be repeated for credit.

252 Seminar in Philosophy of Language (4). May be repeated for credit.

257 Seminar in Philosophy of Mind (4). May be repeated for credit.

261 Seminar in Philosophy of Science (4). May be repeated for credit.

272 Seminar in Ethics (4). May be repeated for credit.

283 Seminar in Social and Political Philosophy (4). May be repeated for credit.

293 Seminar in Aesthetics (4). May be repeated for credit.

297 Seminar in Philosophy of Religion (4). May be repeated for credit.

299 Directed Research (4 to 12). May be repeated for credit. Satisfactory/Unsatisfactory Only.

300 Visitor's Graduate Seminar (4-4-4-4). Presentations by visiting distinguished philosophers.

398 Teaching Assistant Training Program (4). An introduction to theories, methods, and resources that are useful in teaching at the university level, aimed specifically at teaching assistants. Short reading assignments are involved, along with video-tape screenings, and guest speakers. Credits received for this course do not count toward the residency requirement for the Ph.D.

399 University Teaching (4-4-4). Required of and limited to Teaching Assistants.

Program in Russian

460 Humanities Office Building; (714) 856-5433

Michael A. Green, **Program Chair**

Faculty

Harold Baker, Ph.D. Brown University, *Assistant Professor of Russian* (comparative literature, critical theory, literature and visual art, Tolstoy, Mandelstam)

Guy de Mallac, Ph.D. Cornell University, *Professor of Russian* (modern Russian literature, peace studies, philosophy of nonviolence, Tolstoy's thought, Gandhi's thought, religious studies, Russian intellectual thought, Pasternak's life and work)

Michael A. Green, Ph.D. University of California, Los Angeles, *Director of the Program in Russian and Associate Professor of Russian* (eighteenth-century Russian theatre and literary theory, Pushkin, Chekhov, Kuzmin, Russian Symbolist theater, cabaret theatre, Russian literature and theater of the 1920s)

Russian is a language spoken by 215 million people in the Soviet Union and ranks with English and Chinese as one of the three major world languages. Russian is a language of the Indo-European family and is thus related to English, French, and German. Russian is an infinitely rich language, as is English, and adapts itself well to a variety of styles and genres from lyric poetry to the seeming harshness and brashness of the futurist poets.

For the first two years, the Program in Russian emphasizes a combination of speaking, writing, and reading skills. At the end of the senior year, the student can expect to have attained a high level of proficiency in all language skills—reading, writing, speaking, and understanding. By then students will have read selected literary texts—including many significant masterworks—in the original. And they will have familiarity with the major cultural and social trends in Russian history and thought.

In addition to the regular Russian major with emphasis on language and literature, the Program in Russian offers a modified major with emphasis on linguistic theory. This major was designed for those students who wish to focus on the study of the structure of Russian viewed within the framework of Slavic and general linguistics.

The Program in Russian also offers a major with an emphasis in Russian civilization, which is geared to the interests of students who do not intend to specialize in Russian language and literature. This emphasis is based upon a multidisciplinary approach (through language, the arts, thought, literature, history, study of institutions) to the rich variety of a culture that both before the Revolution and during the Soviet period has made an important contribution to mankind's cultural heritage. Various specializations and challenging new career possibilities in today's world are available to students electing this option.

Two minors are also offered by the Program. The Russian Language minor is geared to the student who already has a good command of the language and who wishes to strengthen language skills while acquiring knowledge of Russian literature in the original. Students whose main interests are cultural and historical will find the Russian Area Studies minor of value.

Students planning to major or minor in Russian should contact the Program Office to obtain the most current information. Students are placed in Russian courses according to their years of previous study. In general, one year of high school Russian is equated with one quarter of UCI work. Thus, students with one, two, three, and four years of high school Russian will enroll in Russian 1B, 1C, 2A, and 2B, respectively. Exceptions to this placement formula must be approved by the Program Director. Students with high school training in Russian should consult with the Russian staff before enrolling in Russian courses. Students with transfer credit for college-level Russian may *not* repeat those courses for credit.

Students placed into fourth-year Russian by test or interview must substitute 12 units of other Russian courses in their major program.

Requirements for the Bachelor's Degree

University Requirements: See pages 50–53.

School Requirements: See page 148.

Program Requirements for the Major

Russian Major with Emphasis on Literature: Russian 100A-B-C; 101A-B-C; 110A-B-C; 150A-B-C; 180; any two of the following: 20; 30; 40; 160; 170.

Russian Major with Emphasis on Linguistics: Russian 100A-B-C; 101A-B-C; two courses from 110A-B-C; two courses from 150A-B-C; 180; Linguistics 3; 110; 120; 170.

Russian Major with Emphasis on Civilization: Russian 20; 30; 40; 100A-B-C; 150A-B-C; two courses from 101A-B-C; three courses from History 137A-B, Social Sciences 122A, and any other Russian or Soviet studies course approved by the Program; choice of one course from 110A-B-C, 160, 170, 180.

Residence Requirement: At least five upper-division courses required for the major must be completed successfully at UCI.

Program Requirements for the Russian Language Minor

Seven upper-division courses including Russian 100A-B, 101C, two courses selected from Russian 110A-B-C, two courses selected from Russian 100C and Russian 101A-B; remaining course selected from Russian 110A-B-C, 150A-B-C, 180, or any upper-division Russian course approved by the Program.

Residence Requirement for the Russian Language Minor:

Four upper-division courses must be successfully completed at UCI.

Program Requirements for the Russian Area Studies Minor

Russian 1A; two courses selected from Russian 150A-B-C; History 137A-B; choice of three courses from the following: Russian 1B-C, remaining course of Russian 150A-B-C, Russian 180; and either *one* of Political Science 152D or any other Russian area studies course approved by the Program.

Residence Requirement for the Russian Area Studies Minor:

Four upper-division courses must be successfully completed at UCI.

Planning a Program of Study

The Program in Russian believes in close consultation with students on academic advising, program planning, and discussion of goals and direction. Students planning to major in Russian with an emphasis on literature or on linguistics are strongly urged to consult with the departmental faculty as early as possible, in order to familiarize themselves with the nature of the various programs.

After indicating an intention to major in Russian, the student is assigned to an academic advisor who will help in the task of selecting courses toward the completion of one of the three options open to students majoring in Russian studies at UCI. Special attention is paid to the unique aspects of the Russian field. In particular, students' attention is alerted to the combined academic and career implications and potentialities of these major options.

Career Opportunities

The major in Russian may lead to a career with the federal government, in private enterprise, or in education.

The U.S. Departments of State, Defense, Health and Human Services, the Information Office, and the Library of Congress all hire people who can speak and write Russian. The United States

Information Agency's Voice of America offers opportunities in research, scriptwriting, editing, translating, and announcing.

Because of the importance of Russia in world politics and economics, private businesses and corporations dealing in the international marketplace increasingly employ persons skilled in Russian language and knowledgeable about Russian society and political institutions. Individuals with degrees in Russian may find employment in private enterprise as interpreters and translators in the following areas: library science, communications media, science, and technology.

Students who major in Russian may either go on to graduate programs or enter a career in education. Many students have entered teaching at the secondary level, while others, after graduate work in education, seek positions at colleges and universities.

Since Russian is second only to English as a world language of science, the study of Russian provides access to a large body of the world's scholarly, scientific, and technical literature. While the study of Russian language, literature, and civilization provides training that may lead to careers similar to those described above, the major program is viewed primarily as a valuable component of a liberal education and an instrument for the investigation and appreciation of the modern world.

The Career Planning and Placement Center provides services to UCI 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 Planning and Placement Center section for additional information.

Courses in Russian

Lower-Division

1A-B-C Fundamentals of the Russian Language (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. Credit will be given only once for the Russian fundamentals sequence taken as Russian 1A-B-C or R1A-B-C.

2A-B-C Second-year Language Study (4-4-4) F, W, S. The student can expect to read simple passages from contemporary Russian literary texts and newspapers. Development of oral skills and exposure to Russian culture continue. (V)

20 Russian Civilization: Tsars to Commissars (4). Definition of Russian culture from the medieval to the modern period, with attention to political, philosophical, and literary interpretations. The power structures are related to their impact on the cultural scene. Based on a multidisciplinary approach. Lectures, readings, and discussions in English: (IV, VII-B)

25 Russian-American Communication (4) F, W, S. Study of the nature and development of communication between Russians and Americans at both personal and institutional levels. Fosters independent research on cultural and attitudinal realities and changes, plus critical analysis. Materials researched include newspapers, journals, and literary and social documents. (VII-B)

30 Survey of Russian Drama: The Unknown Russian Theatre (4). Traces the development of the Russian theatre through the Symbolist drama to Futurism and the post-Revolutionary era. Unknown, previously untranslated works by the great Russian dramatists are explored as well as the standard classics. Lectures, readings, and discussions in English. (IV, VII-B)

40 Russian Intellectual Thought: Prophets, Rebels, Mystics (4). Major exponents of Russian thought: religious, rationalist, and radical. Focusing on the polarity between religious-philosophical trends and radical systems and ideologies. Lectures, readings, and discussions in English. (IV, VII-B)

Upper-Division

100A-B Third-year Language Study (4-4) F, W. Continuation of second-year program, with emphasis on grammar review, development of oral and written composition skills, and reading comprehension.

100C Phonetics and Review Grammar (4) S. Contrastive analysis of sounds and intonation of Russian. Grammar concentrates on some of the more difficult points.

101A-B Fourth-year Language Study (4-4) F, W. Advanced study of Russian. The aim is to enhance comprehension and develop vocabulary at the conceptual level of oral and written exposition. Reading and analysis of literary and nonliterary texts; advanced study of morphology, syntax, and stylistics; exploration of translation techniques. Lectures, discussion, and term papers in Russian. Open to qualified nonmajors by consent of instructor.

101C The History and Development of the Russian Literary Language (4) S. Philological introduction to the development of literary language from the eleventh through the twentieth centuries. Analysis of modern style from the viewpoint of previous changes in the language.

103 Advanced Russian Conversation (2-2-2). Enables students to engage more easily in everyday activities using the Russian language. Discussions based on articles from Russian periodicals and on selected texts as well as on Soviet radio and television broadcasts. Prerequisite: Russian 2C or consent of instructor.

110A Nineteenth-Century Russian Literature (4) F. First course in a three-quarter sequence covering the development of Russian literature from classicism to modernism, stressing the evolution of Russian narrative prose and poetry. Selected masterpieces of the major Russian writers from Pushkin to Turgenev within the milieu of the Western literary tradition and in the Russian cultural and socio-political context. Discussion conducted largely in Russian.

110B Development of Russian Literature 1860s-1920s (4) W. Development of Russian literature from 1860s-1920s during the period of modernism and revolutionary experimentalism. In Russian.

110C Contemporary Russian Literature (4) S. Study of typical works of "Socialist Realism" and of literature of the post-Stalinist era, focusing on the renaissance of critical or psychological realism in the 1960s and 1970s. Reading and discussion in Russian.

139 Writing about Literature (4) F, W, S. Requires at least 4,000 words of assigned composition based upon readings in Russian literature (in English translation). Several essays required. Topics vary from quarter to quarter. Russian majors are given admission priority. Prerequisites: satisfaction of lower-division writing requirement; junior status or consent of the instructor. Same as Russian 150A, 150B, or 150C with writing component. (VII-B)

150A Russian Literature 1800-1880 (4) F. Development of Russian literature from classicism to modernism, stressing the evolution of Russian realism and the novel. Selected masterpieces of the major Russian writers from Pushkin to Dostoevsky within the milieu of the Western literary tradition and in the Russian cultural and socio-political context. May be taken as 139 to satisfy upper-division writing requirement. Same as Humanities 170RA. (VII-B)

150B Russian Literature 1880-1930 (4) W. Development of Russian literature from 1880s to 1930s during the period of modernism until the imposition of "Socialist Realism." May be taken as 139 to satisfy upper-division writing requirement. (VII-B)

150C Contemporary Russian/Soviet Literature (4) S. Study of major works of "Socialist Realism" and of literature of the post-Stalinist era, focusing on the renaissance of critical/psychological realism in the 1960s and 1970s. May be taken as 139 to satisfy upper-division writing requirement. Same as Humanities 170RB. (VII-B)

160 The Russian Cinema (4) W. Russian cinema from historical, theoretical, and comparative perspectives. Implications for Russian society and impact on Russian literature. Discussions and readings in English. Content varies with instructor. May be repeated for credit when topic changes. Same as Film Studies 160.

170 Russian Literature (in Translation) (4) S. An exploration of a specific period or problem in Russian literature. Lectures, reading, and

discussion in English. Topic varies. May be repeated for credit when topic changes.

180 Major Russian Literary Figure (4-4-4) F, W, S. The study of a major Russian literary figure of the nineteenth or twentieth century. Topic varies. Lectures, reading, and discussion in English. May be repeated for credit when topic changes.

NOTE: Courses numbered 198-291 are by special consent and arrangement, to be taken only when the materials to be studied and the topics to be pursued are not offered in scheduled courses by the Program, when the student will not have a formal chance to pursue the subject of interest in the course of the academic year. Before enrolling in these courses, students must have the consent of the instructor and the Program Director, and must submit a written description of the course plan to the Director by the end of the first week of instruction.

198 Guided Group Study (4) F, W, S. Special topics in Russian studies through directed reading and research. Consultation with instructor is required prior to registration. May be repeated for credit when topic changes.

199 Special Studies in Russian (1 to 4 per quarter) F, W, S. Opportunity to study on an individual basis topics of special interest. By consent of instructor. May be repeated for credit when topic changes.

Graduate

200 Selected Topics in Russian Linguistics (4) S

220 Studies in Russian Literature (4) W

291 Guided Reading Course (4)

399 University Teaching (4-4-4) F, W, S. Required of and limited to Teaching Assistants.

Department of Spanish and Portuguese

322 Humanities Hall; (714) 856-6901

Juan Villegas, **Department Chair**

Faculty

Richard Barrutia, Ph.D. University of Texas, *Professor of Spanish and Linguistics and Coordinator of the Education Abroad Program* (applied linguistics, bilingualism and English as a second language)

Juan Bruce-Novoa, Ph.D. University of Colorado, *Professor of Spanish* (Latin American and Chicano literatures)

Anne J. Cruz, Ph.D. Stanford University, *Associate Professor of Spanish* (Golden Age Spanish and comparative literature)

Ana Paula Ferreira, Ph.D. New York University, *Assistant Professor of Portuguese* (Portuguese, Brazilian, and Lusophone African literatures)

Lucía Guerra-Cunningham, Ph.D. University of Kansas, *Professor of Spanish* (Latin American literature, literary theory, and women's studies)

María Herrera-Sobek, Ph.D. University of California, Los Angeles, *Professor of Spanish* (Latin American and Chicano folklore, bilingualism)

Seymour Menton, Ph.D. New York University, *Professor of Spanish and Portuguese* (Latin American novel and short story)

Alejandro Morales, Ph.D. Rutgers University, *Professor of Spanish* (Latin American and Chicano literature, film studies)

Gonzalo Navajas, Ph.D. University of California, Los Angeles, *Professor of Spanish* (nineteenth- and twentieth-century Spanish literature and critical theory)

Héctor Orjuela, Ph.D. University of Kansas, *Professor of Spanish* (Latin American literature, poetry and essay)

Julian Palley, Ph.D. University of New Mexico, *Professor of Spanish* (modern Spanish literature)

Armin Schwegler, Ph.D. University of California, Berkeley, *Assistant Professor of Spanish and Linguistics* (history of Spanish, dialectology, historical linguistics, typology, Creoles)

Dayle Seidenspinner-Núñez, Ph.D. Stanford University, *Associate Professor of Spanish and Deputy Director, Humanities Research Institute* (medieval Spanish and comparative literature)

Juan Villegas, Ph.D. Universidad de Chile, *Chair of the Department and Professor of Spanish* (literary theory, modern Spanish literature, Latin American theatre and poetry)

Undergraduate Program

The main objectives of the program in Spanish and Portuguese are to develop competence in the ability to understand, speak, read, and write Spanish and Portuguese, and to provide through the knowledge of these two languages an understanding and appreciation of their literature and culture.

Students are placed in Spanish courses according to their years of previous study. In general, one year of high school Spanish is equated with one quarter of UCI work. Thus, students with one, two, three, and four years of high school Spanish will enroll in Spanish 1B, 1C, 2A, and 2B, respectively. Exceptions to this placement formula must be approved by the appropriate course director. Students with transfer credit for college-level Spanish may not repeat those courses for credit.

All courses in Spanish and Portuguese, unless specifically stated, are taught in the foreign language. 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 on an elementary level.

In the second year, emphasis is put on gradually raising the level of the student's ability to read and write. A third-year two-quarter sequential course stresses composition and introduction to literary analysis. Further, a course in phonetics perfects pronunciation and presents historical and dialect variants of Spanish. The introductory courses in literature, also in the third year, emphasize the analysis and appreciation of complete literary works by genre rather than the study of many short selections of innumerable authors in an anthology. The courses in Hispanic civilization combine a panoramic overview with a close look at a specific country or topic.

Although no major in Portuguese is offered, advanced literature courses are available. In addition, an undergraduate minor is offered.

Students are encouraged to participate in programs of study abroad during the summer and the junior year.

Elected representatives of the undergraduate majors, the graduate students, and the Teaching Assistants participate with full voting rights in Department meetings.

Requirements for the Bachelor's Degree

University Requirements: See pages 50–53.

School Requirements: See page 148.

Departmental Requirements for the Major

Spanish 2C is a prerequisite to major requirements. Students are strongly advised to take Spanish 10A-B *before* the 101 series.

Core: Spanish 10A-B, 101A-B-C-D; Spanish 110A, B, or C; Spanish 113A. In addition, the student must choose one or more of the following emphases:

Literature and Culture: Seven upper-division courses in literature. Two courses in Hispanic culture and civilization may be substituted.

Linguistics: Linguistics 3, Spanish 113B plus any three selected from the following: Spanish 187; Spanish 200 or Linguistics 154; Spanish 201 or Linguistics 170; Spanish 205. Also, students must take two additional upper-division Spanish linguistics or linguistics courses. Students are encouraged to take the Spanish linguistics courses in their senior year. Students may double major in

Spanish and Linguistics but may not count the same course for both majors.

Bilingualism and English as a Second Language: Spanish 100A; Spanish 100B or 115; Spanish 113B; Spanish 114; Spanish 133A or B; Spanish 134A or B; one upper-division literature course. In addition, students are required to take Spanish 110C of the core curriculum.

For students who plan to teach Spanish, the following courses are strongly recommended: Linguistics 3, Linguistics 154 (Second Language Acquisition), Spanish 113B (Spanish Linguistics). Also, Spanish 200 and Spanish 204 should be taken as seniors or as members of the credential program.

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 Spanish Minor

Seven courses in Spanish, including Spanish 10A and 10B and at least four upper-division courses. Prerequisite: Spanish 2C or equivalent.

Residence Requirement for the Minor: At least four upper-division courses required for the minor must be completed successfully at UCI.

Departmental Requirements for the Portuguese Minor

Prerequisite: Portuguese 1C or the equivalent. Requirements: Seven upper-division courses: Portuguese 140A-B, 141, 142, 143, 144, 145. (These are offered on a two-year cycle.)

Residence Requirement for the Minor: At least four upper-division courses required for the minor must be completed successfully at UCI.

Career Opportunities

Spanish is particularly useful in international business or trade, community or social service, and in foreign service. Spanish majors interested in writing may look to publishing, writing, or editing positions.

Majoring in Spanish is excellent preparation for graduate and professional study in law, medicine, social welfare, library science, business or public administration, education, international relations, journalism, or advanced study in Spanish. An option available to Spanish majors is UCI's 3-2 Program offered by the Graduate School of Management, in which students may earn a Bachelor's degree in Spanish and a Master's degree in Management in five years rather than the usual six.

Bilingualism and English as a Second Language are very useful preliminary emphases for many of the fields described above. These areas are closely related to the teacher preparation program offered by the UCI Office of Teacher Education for students interested in the Bilingual/Cross Cultural Emphasis credential.

The Career Planning and Placement Center provides services to UCI 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 Planning and Placement Center section for additional information.

Graduate Program

Master of Arts in Spanish

The candidate is expected to have the equivalent of the UCI undergraduate major. The student takes a minimum of 11 courses, eight of which must be at the graduate level. Two of the 11 courses must be in linguistics. Spanish 239A, *Methods of Literary Criticism*, is required of all literature majors. A maximum of two courses may be transferred from another university, but a maximum of five may be accepted from another University of California campus. Proficiency (defined as the equivalent of the level attained at the end of course 2C) in a foreign language other than the major language is required. The comprehensive examination, in part written, in part oral, will be based both on a reading list and the courses taken and will also test students ability to express themselves correctly in Spanish. No thesis is required. The student may choose an emphasis in literature or linguistics. The M.A. requires a minimum of one year in academic residence and must be completed in no more than three years of graduate study. Normally only students who are studying for the Ph.D. are admitted to the graduate program. The comprehensive examination for the M.A. may be accepted as the written portion of the qualifying examination for the Ph.D.

Master of Arts in Teaching in Spanish

This program is specifically designed to meet the needs of working credentialed teachers, although others may apply. It seeks to provide a group of modern, relevant courses that will enable teachers to keep abreast of recent developments in their field. Applicants should have a B.A. in Spanish and should acquire proficiency in a foreign language other than Spanish. The program consists of 10 courses (eight of which must be at the graduate level) as follows: three courses in Hispanic literature; three courses in Hispanic civilization; three courses in Hispanic linguistics; and one course in Recent Trends in Foreign Language Teaching, to be combined with a curricular research project or a thesis. M.A.T. students are counseled by a faculty member in the Department.

Bilingual/Cross-Cultural Emphasis

The bilingual/cross-cultural emphasis is a specialization in addition to the regular teaching credential for elementary school (Multiple Subject). See the Teacher Education section for additional information. Undergraduates may plan from the beginning to aim for this emphasis by choosing the track in Bilingualism and English as a Second Language.

Ph.D. in Spanish

The Department of Spanish and Portuguese offers a Ph.D. degree in Spanish with a specialization in Spanish literature, Spanish-American literature, or Chicano/Latino literature. The program attempts to integrate period and genre studies with work in literary theory, linguistics, and socio-historical studies. Students are advised to take a number of courses outside of the Department. The Department thereby hopes to aid in the formation of Ph.D. candidates who are not narrow specialists but rather scholars acquainted with the various fields that relate to their discipline. The Department is concerned also with the practical aspects of helping its graduates become good teachers.

The minor field can be Spanish literature, Spanish-American literature, Chicano studies, Spanish linguistics, literary theory, comparative literature, or a non-Hispanic literature.

Language Requirements

A reading knowledge of Portuguese and two other languages relevant to the student's area of specialization is required. Advanced study in one of these languages may be offered in lieu of the reading knowledge of the other. The choice of languages requires Department approval.

Course Requirements

A minimum of 23 courses beyond the B.A. or 12 beyond the M.A. are required: two courses in linguistics, one diachronic and one synchronic; one course in Luso-Brazilian literature; two courses in literary theory (Spanish 239A and one other course from within or outside the Department).

The remaining courses are distributed according to the student's needs and interests. These are determined in consultation with the students' guidance committee, which is comprised of three faculty members who are appointed to recommend the student's program. A minimum of 12 courses should be taken during the student's residence at UCI as a Ph.D. candidate, even if some of them have been taken in partial fulfillment of a M.A. degree elsewhere. Students are normally encouraged to take more than the minimum number of required courses.

Teaching

Since the overwhelming majority of Ph.D. candidates plan to teach, the Department recognizes its responsibility to train them as teachers. Therefore, all Ph.D. candidates without previous teaching experience are required to teach one course under supervision in each of three quarters at UCI. Candidates are also required to teach in an upper-division course related to their specialization.

Comprehensive Examination

The student is admitted to candidacy by passing, by a majority vote, an oral examination administered by a Candidacy Committee appointed by the Graduate Council. The Candidacy Committee is composed of five members, four of whom are from the Department. The oral examination will be preceded by a written examination consisting of three parts:

1. A four-hour examination on the specialization, which includes questions of (a) a panoramic nature, either synchronic or diachronic, the choice being left to the student; (b) theory of the genre of choice; and (c) the specific emphasis selected by the student.
2. A three-hour examination on the minor field.
3. A three-hour examination on a topic that may cross generic or chronological lines. The student will propose the topic, which is subject to the approval of the guidance committee, and which cannot duplicate substantially any other parts of the examination.

Dissertation

A dissertation topic will be chosen by the candidate and will normally fall within one of the major fields covered by the comprehensive examination.

Three faculty members appointed by the Graduate Council constitute the Doctoral Committee which supervises the preparation and completion of the doctoral dissertation. The Doctoral Committee supervises a final examination, the focus of which is the content of the dissertation. Ordinarily, the final examination will not be given after the dissertation is completed, but rather at an appropriate point during its development. Such final examination normally will be given while the graduate student is in residence at UCI. The Doctoral Committee certifies that a completed dissertation is satisfactory through the signatures of the individual Committee members on the title page.

Courses in Portuguese

Lower-Division

1A-B-C Fundamentals of Portuguese (4-4-4) F, W, S. Basic grammar, composition, and conversation with an initial exposure to the varied cultures of the Portuguese-speaking world. (V)

Upper-Division

140A-B Luso-Brazilian Prose Fiction (4-4) F, W. Comparative study of the development of the novel in Portugal and in Brazil from Romanticism to the postmodern period. First segment devoted to the nineteenth century; second segment to the twentieth century, including works by women and by African writers. Prerequisites: Portuguese 1A-B-C or equivalent. (140A: VII-B)

141 Luso-Brazilian Civilization (4) F. An introduction to significant historical, social, and cultural trends in the Portuguese-speaking world through the use of essays, short literary works, paintings, and popular art. Prerequisites: Portuguese 1A-B-C or equivalent.

142 Luso-Brazilian Short Story (4) W. Discussion of Machado de Assis and Eca de Queiroz's best-known short stories, followed by an introduction to subsequent developments of the genre in twentieth-century literatures of Portuguese expression, including African and Luso-American. Prerequisites: Portuguese 1A-B-C or equivalent.

143 Luso-Brazilian Poetry (4) W. An overview of selected poetic works in the Portuguese language, ranging from the medieval "Cancioneiros" to the Modernist period and beyond. Prerequisites: Portuguese 1A-B-C or equivalent.

144 Masterpieces of Luso-Brazilian Literature (4) F. In-depth analysis of one period or major author of Portuguese literature or one period or major author of Brazilian literature. Prerequisites: Portuguese 1A-B-C or equivalent.

145 Luso-Brazilian Theatre (4) S. The study of selected twentieth-century plays, predominantly from Brazil, within a socio-historical context. The problem of dramatic production and political repression is discussed in relation to the Portuguese "teatro de revista." Prerequisites: Portuguese 1A-B-C or equivalent.

190 Individual Studies (4-4-4) F, W, S

Graduate

290 Individual Study (4) F, W, S

Courses in Spanish

Lower-Division

1A-B-C Fundamentals of Spanish (5-5-5), 1A (F, W), 1B (F, W, S), 1C (F, W, S). Natural approach with emphasis on conversational skills: the students and their environment, their experiences, and their opinions about issues. Reading and writing skills also introduced. Taught completely in Spanish.

S1A-B Fundamentals of Spanish (7.5-7.5) Summer. First year Spanish in an intensified form.

2A-B-C Intermediate Spanish (4-4-4), 2A (F, W), 2B (F, W, S), 2C (F, W, S). Conversation, reading, and composition skills are developed using texts of literary and social interest. Emphasis on grammar review in 2A. Prerequisite: Spanish 1C or equivalent. (V)

S2A-B Intermediate Spanish (6-6) Summer. Conversation, reading, and writing skills are developed using texts of literary and social interest. Prerequisite: Spanish 1C.

5 Spanish for Spanish Speakers (4) F. Workshop 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.

6 Spanish for Medical Personnel (4) S. Emphasizes medical terminology. Grammatical structures and vocabulary needed to interview and converse with Spanish-speaking patients. Prerequisite: one year of college-level Spanish or the equivalent.

10A-B Advanced Composition (4-4). Compositions on a variety of themes, motivated and prepared in the classroom and arranged in order of difficulty. Review of selected grammatical topics. Prerequisite: completion of Spanish 2C or equivalent. (VII-B)

15 Advanced Listening Skills (4). Increases student's ability to understand Spanish spoken in the media. Listening strategies; vocabulary preparation for listening activities; discussions of the content of listening activities. Prerequisites: Spanish 10B and consent of instructor.

44 Hispanic Literatures for Nonmajors (4) F, W. 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. Selections of text vary. (VII-B)

50A-B-C The Individual and Society in Hispanic Literature (4-4-4). **50A-B:** Spanish works in translation; **50C:** Latin American and Chicano works. Taught in English. (IV)

Upper-Division

100A Theory and Practice of Bilingual Education (4). Theoretical and historical framework for bilingual education as practiced in the United States. Major theoretical research regarding bilingual education and language acquisition. Analysis of the historical context in which bilingual education is grounded in the United States. Examination of the various changes in government policy and perceptions. Prerequisite: Linguistics 3.

100B 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. Same as Education 140A.

101A-B-C Introduction to Spanish Poetry, Drama, Prose Fiction (4-4-4) F, W, S. Analysis and interpretation of the outstanding works of Spanish literature. Concepts of literary history and theory. Prerequisite: Spanish 2C or equivalent. (VII-B)

101D Introduction to Latin American Literature (4). Analysis and interpretation of masterpieces of Latin American literature. Prerequisite: Spanish 2C or equivalent. (VII-B)

110A-B-C Hispanic Civilization (4-4-4) F, W, S. Each quarter focuses on a different country or topic. Content varies yearly. May be repeated for credit when topic changes. Prerequisite: Spanish 10B or equivalent. Same as Humanities 170SC. (110A-B: VII-B; 110C: VII-A)

113A Spanish Phonetics (4). Comparison of English and Spanish phonetics. Introduction to Spanish dialectology. Prerequisite: Spanish 2C or equivalent.

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 bilingualism. Linguistics 50 recommended.

114 Methods of Teaching English as a Second Language (4). Methods and materials for teaching English to speakers of other languages. Includes methodology for teaching children, adolescents, and adults. Field experience required. Recommended: Linguistics 3 and 154. Same as Linguistics 163C and Education 140C.

115 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. Required field observations. Emphasis placed on training differences for native vs. nonnative Spanish speakers. Prerequisite: consent of instructor. Same as Education 140B.

116A, B, C Medieval Spanish Literature (4-4-4) F, W, S. 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. Prerequisite: Spanish 10A-B. May be repeated for credit as topic varies. (VII-B)

117A, B, C Golden Age Literature (4-4-4). Golden Age literature in Spain including the Renaissance and Baroque periods. Works of poetry, narrative, and theater. Historical and cultural background. May be repeated for credit when topic changes. (VII-B)

119A, B, C Nineteenth-Century Spanish Literature (4-4-4). The main literary and ideological trends in nineteenth-century Spain, including romanticism, realism, and naturalism.

120A, B, C Twentieth-Century Spanish Literature (4-4-4). Twentieth-century Spanish authors. Works of poetry, narrative, and theater. Historical context of the period and principles of literary theory.

130A Spanish-American Prose Fiction 1830–1920 (4) F. Development of the novel and short story from Romanticism through Modernism. (VII-B)

130B Spanish-American Prose Fiction 1920–1950 (4) W. The search for a national identity in the context of European values and indigenous tradition. Criollismo, Surrealism, and Existentialism. (VII-B)

130C Spanish-American Prose Fiction 1950 to present (4) S. Magic Realism, the Fantastic, Self-Conscious Fiction. Mass media techniques, linguistic play. Borges, Rulfo, García Márquez, Cortázar, Puig. (VII-B)

131A Spanish-American Poetry (4) F. The study of a particular movement, period, or theme, emphasizing poetry, e.g., modernismo, Vanguardismo, Post-Vanguardismo, or women's literature. (VII-B)

131B Spanish-American National Literature (4) W. The literature of specific countries with emphasis on the socio-historical contexts. Representative texts from all genres, including the essay. (VII-B)

131C Spanish-American Theatre (4) S. The twentieth-century Spanish-American theatre in one or more countries. Structured around movements, chronological periods, or themes. (VII-B)

133A-B Chicano Literature (4-4). Same as Humanities 170SA-SB(VII-A)

134 Chicano Culture (4). Current research and perspectives on different aspects of Chicano culture: political, economic, sociological, artistic, and folkloric. Topics may change from year to year. May be repeated once for credit when topic changes. (VI-A)

135 Latino Literatures of the United States (4) W. Acquaints non-Spanish majors with the literatures written in the United States by Spanish-speaking sectors of our population. Selections in English, or translated from the Spanish. (VII-A)

139 Writing about Literature (4). A course requiring at least 4,000 words of assigned English composition based on peninsular Spanish and/or Latin American texts in English translation. Several essays required. Topics vary. Spanish majors are given admission priority. Prerequisites: satisfaction of lower-division writing requirement; junior standing or consent of instructor.

150 Spanish-American Literature in Translation (4). Recent Latin American fiction of Revolution and Escapism. Readings of Cortázar, Borges, Fuentes, García Márquez, Rulfo, and Desnoes. Taught in English. (VII-B)

160 Topics in Hispanic Film Studies (4). Study of Spanish, Latin-American, or Chicano cinema from historical and stylistic perspectives. Sociological implications of the media and its relation to literature. Scenarios, cinematographic theories, films. May be repeated for credit when topic changes. In English. Same as Film Studies 160. (VII-B)

165 The Cinema of Spain (4) F. Study of the main films of Spanish cinema from the classical period to modern authors. Readings and discussion on the connections between film and the major cultural developments in modern Spain placed in a European context. Introduction to film techniques.

185 Selected Topics in Spanish Literature (4). Selection of representative topics in Spanish literature. May be repeated for credit when topic changes. Same as Humanities 170SD. (VII-B)

186 Selected Topics in Latin American Literature (4). Selection of representative topics in the history of Latin American literature. May be repeated for credit when topic changes.

187 Selected Topics in Spanish Linguistics (4). Major topics in Spanish linguistics. Emphasis on history of Castilian and major varieties of modern peninsular and American Spanish dialects. Judeo Spanish and Spanish-related creoles (papiamentu, palenquero) and their importance to history of standard Spanish. May be repeated for credit when topic changes.

190 Individual Study (4) F, W, S

Graduate

In addition to the following courses, graduate students might find these Humanities courses of special interest: Humanities 200 (The Nature and Theory of History); Humanities 210 (Approaches to Linguistic Study); Humanities 220 (Literary Theory); and Humanities 230 (Philosophical Analysis).

200 Second-Language Acquisition (4) F, S. A survey of the psycholinguistic research in language acquisition; children's first, second, and/or foreign language. Includes studies in contrastive analysis (Spanish-English) and error analysis in a variety of acquisition processes.

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.

202 Spanish in the United States (4) S. Focuses on sociolinguistic functions of the various social and stylistic varieties of Spanish in the U.S. in spoken and written forms. Study of phonological, morphological, syntactical, and lexical differences and similarities with the standard Latin American and peninsular Spanish. Emphasis on recent work in Chicano discourse, and examination of relevant research on various dialects.

204 Recent Trends in Foreign Language Teaching (4). Recent theories and implications for language teaching. Topics include recent research in new methodologies of language acquisition. Review of linguistic research comparing various communicative trends including the cognitive code, the natural approach, the direct method, audiolingual, and most of the communicative and proficiency-oriented strategies of language teaching.

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.

210 Proseminar in Medieval Literature (4) S. Survey of Spanish Medieval literature covering main literary and cultural trends. Analysis of Spanish masterpieces including *Poemas del Mio Cid*, *Libro de Buen Amor*, and Manrique's *Coplas*.

212 Studies in Medieval Spanish Literature (4) F. Seminar focusing on particular work, aspect, theme, genre, or period of medieval Spanish literature. Taught in Spanish or English. May be repeated for credit as topic varies.

214 Proseminar in Golden Age Literature (4) W. Survey of the major literary and cultural developments in sixteenth- and seventeenth-century Spain, such as the Italianate lyric, the pastoral, and the new narrative of the *novelas ejemplares*. Mysticism and the Counter Reformation, the concept of honra, the formation of a national theater, and the Baroque *desengaño*. Recommended for M.A. students.

215 Golden Age Prose Fiction (4) F. Examines major examples of Spanish Golden Age narrative: its genesis, development, and intertextuality. Analyzes the genre both as a literary phenomenon and as a critique of Spain's changing political and social conditions.

216 Golden Age Lyric Poetry (4) S. Critical analysis of major Spanish Golden Age lyric poets (Garcilaso, Luis de León, San Juan de la Cruz, Lope de Vega, Góngora, Quevedo) with an attempt to present a historical development of Spanish poetry and to relate this to larger sociohistorical forces.

217 Golden Age Theatre (4) F. Major *comedias* of the Golden Age. Prefaced by a brief survey of prior dramatic traditions in Spain. Includes Lope de Vega in the *comedia nacional*; social and religious drama and the *comedia capa y espada* (Ruiz de Alarcón, Tirso de Molina, Calderón).

219 Nineteenth-Century Spanish Literature (4) S. Romanticism. Realism. Naturalism and Generation of 1898. Lyric Poetry. Narrative and theater.

220 Modern Spanish Novel (4) W. Reading and discussion of representative works by twentieth-century Spanish novelists. Theory of the novel. Twentieth-century history of Spain.

221 Modern Spanish Poetry (4) S. Reading and discussion of the works of Spain's most significant twentieth-century poets. Includes theory of lyric poetry and modern history of Spain.



Group discussion sessions, characteristic of many courses offered by the various departments within the School of Humanities, challenge students to express and support their viewpoints.

222 Modern Spanish Theatre (4) F. Reading and discussion of the works of Spain's most representative twentieth-century playwrights. Includes theory of theater and history of Spain.

223 Generation of 1898 (4) W. Analysis of the turn-of-the-century literature. Philosophical, historical, and cultural underpinnings of the changes in literature and art that took place at the time. Major authors: Unamuno, Valle Inclán, Machado.

224 The Spanish Essay (4) S. Study of the major thinkers of modern Spain, emphasizing their connections with European thought in particular. Works of Ortega y Gasset, Unamuno, Aranguren. Emphasis on the study of aesthetic ideas.

231A Latin American Theatre (4) W. History of Latin American theatre from colonial to present times. Emphasis on homology of theatre and society as well as theory of theatrical history. Taught in Spanish.

231B Modern Latin American Theatre (4) S. Contemporary theatre from one or more countries. Emphasis on theatrical discourse-producers-audience and society. Taught in Spanish. May be taken for credit two times as topic varies.

232 Spanish-American Short Story (4-4) S. Study of the Spanish-American short story, including its theory and history. Devoted to the works of a particular region or country. May be repeated for credit when geographical area changes.

233 Spanish-American Novel (4). Concentrates on the novels of a specific author or on the novels of a specific country including Argentina, Chile, Colombia, Cuba, and Mexico. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

234 Spanish-American Poetry (4) S. Study of major Spanish-American poets and poetic trends. Poets include: Rubén Darío, Gabriela Mistral, Pablo Neruda, Jorge Luis Borges, César Vallejo, Octavio Paz, Ernesto Cardenal.

235 Spanish-American Essay (4) F. Main themes and problems related to Spanish-American search for national and cultural identity within the framework of contemporary thought. Readings include works by Mariategui, A. Reyes, Paz, and Martínez Estrada.

236 Selected Topics in Hispanic Civilization (4) W. Topics vary. May be repeated for credit when topic changes.

237 Selected Topics in Chicano Literature (4) S. Explores the idea of minor literature as central to answering questions of language, fragmentation, decanonization, indeterminacy as posited in the Chicano novel.

238A Precolonial and Colonial Spanish-American Literature (4) S. Focuses on the literature produced during the colonial period (1521-1810) in Latin America. Examination of a few pre-Hispanic texts. Readings

from the early chroniclers such as Dias del Castillo, Garcilaso de la Vega, Ercilla y Zúñiga, and Sor Juana.

238B Nineteenth-Century Spanish-American Literature (4) W. Study of works by outstanding writers: Bello, Heredia, Sarmiento, Pombo, J. Hernández, R. Palma, J. Martí, Silva. Collateral readings in philosophical trends, literary history, social conditions, and criticism.

239 Methods of Literary Criticism (4) F. Literary studies and the social and philosophical view of the critic; the nature of literature and the mode of existence of a literary work; literary genres (definitions and distinctions); the problems of literary theory; intrinsic and sociological interpretation of literature. These theories are applied to Hispanic texts.

240A-B-C Literary Criticism, Theory of a Genre (4-4-4) W. The study of literary genres (novel, poetry, and theater) from the different theoretical perspectives developed during the twentieth century. The theories are applied to Hispanic texts.

241A-B-C Women's Literature in Spain and Spanish America (4-4-4) F, W, S

245 The Spanish Cinema: Theories of Narrativity (4) F. Study of the modern Spanish film with an emphasis on the films of the last fifteen years. Special attention to the study of narration in film and fiction and the formal links between the two media. May be repeated for credit as topics vary.

250 Mexican Corrido (4) F. Seminar. Study of the Mexican corrido or ballad with critical analysis of its historical development from the Spanish Romance period to the present. Structural forms and themes. Sociopolitical and cultural influences.

251 Latino Literatures of the United States (4) W. Analysis of important works of Hispanic-American fiction. Explores works that are considered marginal to the canon. Component of theories of ethnic discourse. May be repeated 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 (2) F, W, S. Discussion of the theory and practice of creative writing. Critical analysis of the participants' work in progress. Guest writers.

290 Individual Study (4-4-4) F, W, S

291 Directed Reading (4-4-4) F, W, S

299 Dissertation Research (4 to 12) F, W, S. Satisfactory/Unsatisfactory Only.

399 University Teaching (4-4-4) F, W, S. Required of and limited to Teaching Assistants.

School of Physical Sciences

Harold W. Moore, **Dean**

231 Physical Sciences I
Academic Counseling: (714) 856-6507

The School of Physical Sciences offers both professional training and general education in the Departments of Chemistry, Mathematics, and Physics. In addition, a new graduate degree program in geosciences is being developed. 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. The new geosciences program will also be grounded in the traditional physical sciences while breaking new paths in the quantitative study of changes in the global environment.

In recognition of the contribution students can make to the academic affairs of the School, a variety of responsibilities on School and departmental committees is given to undergraduate and graduate students.

Degrees

Chemistry.....B.S., 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. The School of Physical Sciences also grants special honors to students who have distinguished themselves by their work in their major subject. A general criterion is that students must have completed at least 72 units in residence at a University of California campus.

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 or industry, of students planning advanced professional study, and of students planning graduate work that continues their major interest. 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, Engineering 10, or Engineering ECE11A.

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. 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 Career Planning and Placement Center provides services to UCI 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 Planning and Placement section for additional information.

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 more than 85 host universities and colleges in 33 countries throughout the world. See the Education Abroad Program section for additional information.



Departmental requirements for the major in Chemistry leave students a great deal of latitude in their selection of courses; students may choose to pursue interests ranging from biochemistry to chemical physics.

3-2 Program

Chemistry, Physics, or Mathematics majors who are interested in a career in management may wish to apply for entry into the Graduate School of Management's 3-2 Program. Students normally apply for this program early in their junior year. See the Graduate School of Management section for further information.

Requirements for the Bachelor's Degree

University Requirements: See pages 50–53.

School Requirements

In addition to the courses taken in fulfillment of the UCI breadth requirement, students with a major in the School of Physical Sciences are required to take one additional approved three-course group chosen from one of the following breadth categories: Category III (Social and Behavioral Sciences); Category IV (Humanistic Inquiry); or the Language and Linguistics section of Category V. For purposes of this requirement, the approved sequences are the same ones listed for the UCI breadth requirement, with the exception that any three consecutive foreign language courses are acceptable. The lower-division courses in the minor in Global Peace and Conflict Studies (History 11, Physics 16, and Political Science 42A) also constitute an approved sequence for this requirement.

Graduate Programs

A program of course work and research leading to the M.S. and Ph.D. degrees is offered in the Departments of Chemistry, Mathematics, and Physics. In addition, a new graduate program in Geosciences is being developed.

Geosciences

210 Physical Sciences Research Facility; (714) 856-8794

Ralph J. Cicerone, **Chair**

Faculty

- Ralph J. Cicerone, Ph.D. University of Illinois, *Chair of Geosciences, Professor of Geosciences and Chemistry, and Daniel G. Aldrich Jr. Chair* (atmospheric chemistry)
 William S. Reeburgh, Ph.D. The Johns Hopkins University, *Professor of Geosciences* (geochemistry and biogeochemistry)
 Darin W. Toohey, Ph.D. Harvard University, *Assistant Professor of Geosciences* (atmospheric chemistry and reaction kinetics)
 Susan E. Trumbore, Ph.D. Columbia University, *Assistant Professor of Geosciences* (geochemistry and biogeochemistry)

The School of Physical Sciences is developing a new graduate program leading to the Ph.D. in Geosciences. Initial emphasis will be on the physics and chemistry of the atmosphere and oceans, including global and regional climate change and large-scale changes in environmental chemistry. Research leading to doctoral dissertations will be conducted through field measurements, laboratory experiments, theoretical studies, numerical model simulations, and the detection of trends from large data sets. Graduate courses will be offered on the physics and chemistry of atmosphere and ocean, including topics such as experimental and computational methods. In 1991–92, the recruiting of Geosciences faculty members will continue along with the planning of course offerings. For additional information, contact the Chair.

Department of Chemistry

518 Physical Sciences I; (714) 856-6015

Larry E. Overman, **Department Chair**

Faculty

- Vartkess A. Apkarian, Ph.D. Northwestern University, *Associate Professor of Chemistry* (chemical physics)
 Fraser A. Armstrong, Ph.D. University of Leeds, *Assistant Professor of Chemistry* (bioinorganic chemistry)
 Steven L. Bender, Ph.D. Harvard University, *Assistant Professor of Chemistry* (organic and bioorganic chemistry)
 David A. Brant, Ph.D. University of Wisconsin, *Professor of Chemistry* (physical chemistry of biological macromolecules)
 A. Richard Chamberlin, Ph.D. University of California, San Diego, *Associate Professor of Chemistry* (organic synthesis and bioorganic chemistry)
 Ralph J. Cicerone, Ph.D. University of Illinois, *Chair of Geosciences, Professor of Geosciences and Chemistry and Daniel G. Aldrich Jr. Chair* (atmospheric chemistry)
 Thomas A. Dix, Ph.D. Wayne State University, *Assistant Professor of Chemistry* (bioorganic chemistry and enzymology)
 Robert J. Doedens, Ph.D. University of Wisconsin, *Associate Dean of the School of Physical Sciences and Professor of Chemistry* (structural inorganic chemistry)
 Nancy M. Doherty, Ph.D. California Institute of Technology, *Associate Professor of Chemistry* (inorganic and organometallic chemistry)
 William J. Evans, Ph.D. University of California, Los Angeles, *Vice Chair of the Department and Professor of Chemistry* (synthetic inorganic and organometallic chemistry)
 Frank J. Feher, Ph.D. University of Rochester, *Associate Professor of Chemistry* (organometallic and inorganic chemistry)
 Fillmore Freeman, Ph.D. Michigan State University, *Professor of Chemistry* (organic chemistry)
 R. Benny Gerber, Ph.D. Oxford University, *Professor of Chemistry* (theoretical chemistry and chemical physics)
 Vincent P. Guinn, Ph.D. Harvard University, *Professor Emeritus of Chemistry* (radiochemistry, forensic chemistry)
 Michelle M. Hanna, Ph.D. University of California, Davis, *Assistant Professor of Chemistry* (bioorganic chemistry and molecular genetics)
 Warren J. Hehre, Ph.D. Carnegie-Mellon University, *Professor of Chemistry* (theoretical chemistry)
 John C. Hemminger, Ph.D. Harvard University, *Director of the Institute for Surface and Interface Science and Professor of Chemistry* (surface chemistry and physics)
 Jong K. Kim, Ph.D. University of California, Santa Cruz, *Lecturer in Chemistry* (organic chemistry)
 Franklin A. Long, Ph.D. University of California, Berkeley, *Adjunct Professor Emeritus of Chemistry* (science policy)
 Craig C. Martens, Ph.D. Cornell University, *Assistant Professor of Chemistry* (theoretical chemistry)
 Robert T. McIver, Jr., Ph.D. Stanford University, *Professor of Chemistry* (physical and analytical chemistry)
 George E. Miller, D. Phil. Oxford University, *Senior Lecturer in Chemistry and Reactor Supervisor* (radioanalytical chemistry and chemical education)
 Harold W. Moore, Ph.D. University of Illinois, *Dean of the School of Physical Sciences and Professor of Chemistry* (organic chemistry and rational drug design)
 Larry E. Overman, Ph.D. University of Wisconsin, *Department Chair and Professor of Chemistry* (organic chemistry)
 Reginald M. Penner, Ph.D. Texas A & M University, *Assistant Professor of Chemistry* (analytical chemistry)
 Peter M. Rentzepis, Ph.D. Cambridge University, *Professor of Chemistry and UCI Presidential Chair* (physical chemistry and picosecond spectroscopy)
 Patricia A. Rogers, Ph.D. University of California, Irvine, *Lecturer in Chemistry* (chemical kinetics)
 F. Sherwood Rowland, Ph.D. University of Chicago, *Professor of Chemistry and Bren Chair* (atmospheric chemistry and radiochemistry)
 A. J. Shaka, Ph.D. Oxford University, *Assistant Professor of Chemistry* (physical chemistry)
 Kenneth J. Shea, Ph.D. Pennsylvania State University, *Professor of Chemistry* (organic chemistry and polymer chemistry)

Mare Taagepera, Ph.D. University of Pennsylvania, *Lecturer in Chemistry* (substituent/solvent effects, acid/base chemistry, and chemical education)

Robert W. Taft, Ph.D. Ohio State University, *Professor of Chemistry* (physical organic chemistry)

Max Wolfsberg, Ph.D. Washington University, *Professor of Chemistry* (theoretical 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 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. Completion of a one-year sequence in organic chemistry, either Chemistry 51A-B-C or 52A-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.

Much of the important chemical literature is being and has been printed in foreign languages, principally German, Russian, Japanese, and French. Reading competence in one or more of these languages is desirable, and many graduate schools require the demonstration of such competence as a prerequisite for an advanced degree. Chemistry majors are encouraged to acquire this competence.

Chemistry majors who are interested in teaching chemistry at the secondary level urged to contact the UCI Office of Teacher Education. A two-year post-baccalaureate program leading to 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.

Requirements for the Bachelor's Degree

University Requirements: See pages 50–53.

School Requirements: See page 196.

Departmental Requirements

Basic Requirements: Mathematics 2A-B-C, Physics 5A-B-C and 5LB-LC, Chemistry 1A-B-C and 1LB-LC, Chemistry 52A-B-C and 52LA-LB-LC (or Chemistry 51A-B-C and 51LA-LB-LC), Chemistry 107 and 107L, Chemistry 131A-B-C or 130 A-B-C, Chemistry 151.

Electives: Four courses chosen from the elective list below. These must include at least two courses offered by the Chemistry Department (Chemistry 180 may be counted no more than once, and Chemistry 139W, 192, 194, and 199 may not be counted) and at least one of the laboratory courses in the following laboratory

course group: Chemistry 152, 153, 156, 160, 170, Physics 150, 151, 152, 153.

Elective List: Chemistry 125, 127, 135, 136, 137 and all Chemistry courses numbered 152–235, Biological Sciences 106 (Biochemistry), Biological Sciences 107 (Molecular Biology), Physics 111A-B (Classical Mechanics), Physics 112A-B (Electromagnetic Theory), Physics 113A-B-C (Quantum Physics), Physics 115 (Statistical Physics), Physics 116 (Thermodynamics), Physics 132 (Nuclear Physics), Physics 133 (Condensed Matter Physics), Physics 134 (Modern Optics), Physics 150 (Electronics for Scientists), Physics 151 (Advanced Laboratory), Physics 152 (Advanced Laboratory), Physics 153 (Advanced Laboratory).

Scientific Breadth Requirements: A total of six additional four- or five-unit courses chosen from the offerings of the Departments of Mathematics, Physics, Information and Computer Science, and the School of Biological Sciences. (These may be taken on a Pass/Not Pass basis subject to the usual restrictions on Pass/Not Pass enrollment.)

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 and requires little extra course work. 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: two courses from Mathematics 2D-E, 3A, 3D; Chemistry 152 and 153; at least one advanced laboratory course from Chemistry 156, 160, 170, and 180. 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 1LB-LC, Mathematics 2A-B-C, and required writing courses during the freshman year. The sophomore year should include Chemistry 52A-B-C and 52LA-LB-LC (or 51A-B-C and 51LA-LB-LC); the Physics 5A-B-C and 5LB-LC sequences 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 School of Physical Sciences breadth requirement, the UCI breadth requirement, and the Chemistry Department scientific breadth requirement. In the junior year all Chemistry majors should enroll in a year sequence of physical chemistry and in Chemistry 151 (fall), 107 (winter), and 107L (spring). 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. Chemistry 130A-B-C, designed specifically for students with career interests in biochemistry, biophysics, physiology, and other basic life sciences, emphasizes applications of physical chemistry to liquid solutions, macromolecules, and other topics of biological relevance. During the junior and senior years the Chemistry Department electives requirement should be fulfilled, as should other University, School, and departmental requirements.

Sample Program — Chemistry Majors*

Items in parentheses are recommended choices or alternatives.

	Freshman	Sophomore	Junior	Senior
Fall	Chemistry 1A Mathematics 2A Breadth (Writing) Breadth	Chemistry 52A, 52LA (51A, 51LA) Elective Breadth Science Breadth (Math)	Chemistry 131A (130A) Chemistry 151 Physics 5C, 5LC Physical Sciences Breadth	Chemistry Elective Breadth (Writing) Science Breadth Elective
Winter	Chemistry 1B, 1LB Mathematics 2B Breadth (Writing) Breadth	Chemistry 52B, 52LB (51B, 51LB) Physics 5A Breadth Science Breadth (Math)	Chemistry 131B (130B) Chemistry 107 Chemistry Elective Physical Sciences Breadth	Chemistry Elective Breadth Science Breadth Elective
Spring	Chemistry 1C, 1LC Mathematics 2C Breadth/Elective Breadth	Chemistry 52C, 52LC (51C, 51LC) Physics 5B, 5LB Breadth Science Breadth (Math)	Chemistry 131C (130C) Chemistry 107L Chemistry Elective Physical Sciences Breadth	Chemistry Elective Breadth Science Breadth Elective

* For American Chemical Society certification include two courses selected from Mathematics 2D, 2E, 3A, and 3D for scientific breadth; include Chemistry 152 and 153 plus at least one course selected from Chemistry 156, 160, 170, and 180 among the Chemistry electives.

Sample Program — Chemistry-Biological Sciences Double Majors

Items in parentheses are recommended choices or alternatives.

	Freshman	Sophomore	Junior	Senior
Fall	Chemistry 1A Mathematics 2A Humanities 1A Bio. Sci. 2	Chemistry 52A, 52LA (51A, 51LA) Mathematics 2C Bio. Sci. Core (101)	Chemistry 130A (131A) Chemistry 151 Physics 5C, 5LC	Bio Sci Core (106) Breadth (Writing) Breadth Physical Sciences Breadth
Winter	Chemistry 1B, 1LB Mathematics 2B Humanities 1B	Chemistry 52B, 52LB (51B, 51LB) Physics 5A Bio. Sci. Core (102)	Chemistry 130B (131B) Chemistry 107 Bio. Sci. Core (104, 104L)	Chemistry Elective Bio Sci Core (106L) Breadth Physical Sciences Breadth
Spring	Chemistry 1C, 1LC Bio. Sci. Core (90) Humanities 1C	Chemistry 52C, 52LC (51C, 51LC) Physics 5B, 5LB Bio. Sci. Core (103, 103L)	Chemistry 130C (131C) Chemistry 107L Bio. Sci. Core (105, 105L) Physical Sciences Breadth	Chemistry Elective Bio. Sci. Core (107) Breadth Breadth

Sample programs for Chemistry majors, American Chemical Society-certified Chemistry majors, and Chemistry-Biological Sciences double majors are shown in the accompanying charts. Sample programs for Chemistry majors wishing to emphasize physics, mathematics, computer science, or materials science in their undergraduate programs are available in the Physical Sciences Student Affairs Office, 231 Physical Sciences I.

Graduate Program

The Department offers graduate programs leading to 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 (Plan II). A Master's degree is not a prerequisite for admission to the Ph.D. program.

Upon entering the graduate programs, all students are required to take a series of Area Examinations which test the students' competence in the general areas of chemistry (e.g., organic, physical, inorganic) at the undergraduate level. The Area Examinations are

designed to ensure a proper fundamental level of preparation for graduate study and are used as a guide in choosing the appropriate program of course work for each entering student.

Students in the Ph.D. program are expected to demonstrate their knowledge of chemistry at the advanced level through satisfactory completion of a series of Cumulative Examinations. These examinations are designed to encourage the independent study of chemistry through reading of the classic and current chemical literature and attendance at advanced seminars and colloquia. Normally, beginning with the second year of graduate study, students must take the monthly examinations until four have been passed. This requirement must be satisfied within 12 consecutive Cumulative Examinations.

Following completion of the Cumulative Examination requirement, participants in the Ph.D. program take an oral examination for formal Advancement to Candidacy. This examination normally comes in a student's third graduate year and 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.

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 (Course Work) program requires that the student complete 10 graduate-level chemistry courses (or 40 units). Graduate students are expected to attain grades of B or better to remain in good academic standing.

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.

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 in public 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.

Some faculty from the Department of Chemistry are members of an interdisciplinary biophysics and biophysical chemistry group. The program provides an opportunity for interaction among graduate students and faculty from a number of UCI departments who share common interests in biophysics and biophysical chemistry. Participating graduate students pursue a degree in the department best suited to their own background and research interests. A program of seminars brings the group together to discuss research problems of mutual interest, and a regular series of interdisciplinary courses is offered by the participating faculty to provide formal instruction in areas encompassed by biophysics and biophysical chemistry. See the School of Biological Sciences Graduate Program section for additional information.

In cooperation with the UCI Office of Teacher Education, the Chemistry Department sponsors a coordinated two-year program leading to the M.S. degree in Chemistry and the California Secondary 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 Office of Teacher 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 the Area Examination requirement.

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 (Course Work Plan)

Completion of the Area Examination requirement.

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.

Doctor of Philosophy in Chemistry

Completion of the Area Examination requirement.

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 Cumulative 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.

Courses in Chemistry

Lower-Division

NOTE: Enrollment in lower-division Chemistry courses may be subject to pre-testing or other limitations. See the *Catalogue* Placement Testing section and the quarterly *Schedule of Classes* for information.

1A-B-C General Chemistry (4-3-3) F, W, S. Lecture, three hours; discussion, one hour. Stoichiometry, properties of gases, liquids, solids, and solutions; chemical equilibrium, chemical thermodynamics; atomic and molecular structure; chemical kinetics, periodic properties and descriptive chemistry of the elements. Prerequisites for Chemistry 1A: high school chemistry, three years of high school mathematics; high school physics is recommended. Corequisite for Chemistry 1A, 1B, and 1C: concurrent enrollment in the corresponding laboratory courses. Prerequisite for Chemistry 1B: passing grade in Chemistry 1A. Prerequisite for Chemistry 1C: passing grades in Chemistry 1B and 1LB. (II)

1LB-1LC General Chemistry Laboratory (2-2) W, S. Laboratory, four hours. Training and experience in basic laboratory techniques. Chemical practice and principles illustrated through experiments related to lecture topics of Chemistry 1A-B-C. Corequisite for 1LB and 1LC: concurrent enrollment in the corresponding segment of Chemistry 1. Prerequisite for Chemistry 1LB: passing grade in Chemistry 1A. Prerequisite for Chemistry 1LC: passing grades in Chemistry 1B and 1LB. (II)

1LAE-1LBE General Chemistry Laboratory for Engineering Majors (1-2) F, W. Laboratory, four hours. Training and experience in basic laboratory experiments related to lecture topics in Chemistry 1A-1B. Corequisite for 1LAE and 1LBE: concurrent enrollment in the corresponding segment of Chemistry 1. Prerequisite for Chemistry 1LBE: passing grades in Chemistry 1A and 1LAE. Open to Engineering majors only. Chemistry 1LAE-1LBE satisfies all requirements which are met by Chemistry 1LB-1LC for non-Engineering majors. (II)

10 Preparatory Chemistry (4) S, Summer. Lecture, three hours; discussion, two hours. Preparation for introductory courses in chemistry. Topics include units and systems of measurement, conversion factors, significant figures, experimental error propagation, methods of problem solving, atomic and molecular structure, phase change, solutions, ionization, chemical reactions, stoichiometry, and oxidation-reduction. Not open to students who have received a grade of C- or better in Chemistry 1A. NOTE: This course satisfies no requirements other than contribution to the 180 units required for graduation.

51A-B-C Organic Chemistry (3-3-3) F, W, S. 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: passing grades in Chemistry 51A and 51LA. Prerequisites for 51C: passing grades in Chemistry 51B and 51LB.

51LA-LB-LC Organic Chemistry Laboratory (2-2-2) F, W, S. Laboratory, four hours. Modern techniques of organic chemistry, using selected experiments to illustrate topics introduced in Chemistry 51A-B-C. Corequisite for 51LA-LB: concurrent enrollment in the corresponding segment of Chemistry 51L. Prerequisites for 51LB: passing grades in Chemistry 51A and 51LA. Prerequisites for 51LC: passing grades in Chemistry 51B and 51LB.

NOTE: Chemistry 52A-B-C and 52LA-LB-LC satisfy the same requirements and prerequisites as Chemistry 51A-B-C and 51LA-LB-LC; corresponding segments may not both be taken for credit.

52A-B-C Organic Chemistry for Chemistry Majors (3-3-3) 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 52L. Prerequisites: open to Chemistry majors only or consent of instructor. Prerequisites for 52A: Chemistry 1A-B-C and 1LB-LC. Prerequisites for 52B and 52C: passing grade in previous quarter of sequence.

52LA-LB-LC Organic Chemistry Laboratory for Chemistry Majors (2-2-2) F, W, S. Laboratory, six hours; lecture, one hour. Fundamental techniques of modern experimental organic chemistry. Corequisite: concurrent enrollment in the corresponding segment of Chemistry 52. Prerequisite for 52LB and 52LC: passing grade in previous quarter of sequence.

H90A-B-C The Idiom and Practice of Science (4-4-4) F, W, S. 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 calculus, radiation, Newton's Laws, chemical and biochemical reaction rates, epidemics, atmospheric chemistry and physics, and earthquake physics. Prerequisite: restricted to members of the Campuswide Honors Program or consent of instructor. Same as Mathematics H90A-B-C and Physics H90A-B-C. (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 52A-B-C.

107L Inorganic Chemistry Laboratory (2) S. Laboratory, seven hours. Modern techniques of inorganic and organometallic chemistry including experience with glove box, Schlenk line, and vacuum line methods. Prerequisite: Chemistry 107.

114 Science Education Teacher Apprentice Field Experience (4-4) F, W, S. Students assist public school classroom teachers in laboratory demonstrations and experiments, tutoring individuals or small groups. Same as Teacher Education 114. NOTE: this course satisfies no requirements other than contribution to the 180 units required for graduation.

125 Advanced Organic Chemistry (4) W. Lecture, three hours; discussion, one hour. Rapid-paced comprehensive treatment of organic chemistry, reinforcing the fundamental concepts introduced in the Chemistry 51A-B-C and 52A-B-C series. Focuses on molecular structure, reactivity,

stability, and the 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 52A-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. Prerequisites: Chemistry 107, 130A-B, or 131A-B.

130A-B-C Physical and Biophysical Chemistry. Lecture, three hours; discussion, one hour.

130A Chemical Thermodynamics (4). Classical thermodynamics of pure and multicomponent systems. Derivation of the criteria of chemical and heterogeneous equilibrium. Phase and chemical equilibrium and the properties of solutions. Membrane and multiple chemical equilibria in systems of biological interest. Corequisite: Physics 5C. Prerequisites: Chemistry 1A-B-C; Physics 5A-B; Mathematics 2A-B-C.

130B Quantum Chemistry and Spectroscopy (4). Fundamentals of molecular quantum mechanics. Development of the principles of rotational, vibrational, electronic, and magnetic resonance spectroscopy. Applications of luminescence, chiroptical, Raman, and magnetic resonance spectroscopy to biological structure determination. Prerequisite: Chemistry 130A.

130C Chemical Dynamics and Macromolecules (4). Kinetic theory and statistical mechanics of gases. Chemical kinetics and reaction mechanisms in the gas phase and in solution. Conformational and transport properties of macromolecules in solution. Scattering and diffraction. Prerequisite: Chemistry 130B.

131A-B-C Physical Chemistry. Lecture, three hours; discussion, one hour.

131A Chemical Thermodynamics (4). Chemical thermodynamics of pure and multicomponent systems in the solid, liquid, and gaseous states. Development of conditions of chemical and heterogeneous equilibrium with applications to systems of chemical interest. Corequisite: Physics 5C. Prerequisites: Chemistry 1A-B-C, Physics 5A-B, Mathematics 2A-B-C.

131B Quantum Chemistry (4). 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. Prerequisite: Chemistry 131A.

131C Statistical Mechanics and Chemical Dynamics (4). Development of the relationship between the quantum mechanical properties of individual molecules and the thermodynamic properties of macroscopic collections of molecules. Kinetic theory and transport processes. Rates and mechanisms of chemical reactions. Prerequisite: Chemistry 131B.

135 Methods of Molecular Structure Determination (4) F. Lecture, three hours; discussion, one hour. Prerequisites: Chemistry 130A-B-C or 131A-B-C. Determination of molecular structure using spectroscopic, diffraction, and scattering techniques.

136 The Molecular Structure and Properties of Materials (4) F. Lecture, three hours; discussion, one hour. Development of the molecular basis for the properties of solid materials. Discussion of the interrelationship between molecular structure and properties such as optical behavior, conductivity, superconductivity, and magnetism. The properties of surfaces of materials are contrasted to bulk properties. 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. Prerequisites: Chemistry 51A-B-C or 52A-B-C, Chemistry 130A-B or 131A-B, experience in computer programming.

139 Technical Writing and Communication Skills (4) F, W, S. Lecture, four 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 to Chemistry majors only. Same as Mathematics 139 and Physics 139.

151 Quantitative Analytical Chemistry (5) F. Lecture, three hours; discussion, one hour; laboratory, six hours. Theoretical and practical aspects of important methods in analytical chemistry with laboratory analyses of standard samples. Topics include statistical treatment of data, gravimetry, titrimetry, chromatography and other separation methods, spectrochemical and electrochemical measurements. The use of simple computer programs for data reduction is encouraged. Prerequisites: Chemistry 1A-B-C, 1LB-LC; 51A-B-C and 51LA-LB-LC or 52A-B-C and 52LA-LB-LC.

152 Advanced Analytical Chemistry (4) W. Lecture, three hours; discussion, one hour; laboratory, six 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.

153 Physical Chemistry Laboratory (4) S. Prelaboratory discussion, one hour; 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 and Chemistry 130A-B or 131A-B.

156 Advanced Laboratory in Chemistry of Materials (4) S. Lecture, two hours; laboratory, eight hours. Synthesis and characterization of organic and inorganic materials. Synthesis of linear and network organic polymers, magnetic oxides, thin film metals, non-stoichiometric materials. Characterization includes surface area and pore size distribution, magnetic susceptibility, X-ray fluorescence, neutron activation analysis, gel permeation chromatography. Prerequisite: Chemistry 107, Chemistry 130A-B, or 131A-B.

160 Organic Synthesis Laboratory (4) F. Lecture, two hours; 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 51LC or 52LC.

170 Radioisotope Techniques (4) 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.

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.

192 Tutoring in Chemistry (1 to 4 per quarter) F, W, S. Students may enroll in a section of this course to earn course credit for tutoring associated with the Chemistry Peer Tutoring Program or for activities as a student assistant in a specific chemistry course. Admission to the course will depend upon demonstration of suitable qualifications and approval of the instructor in charge. Prerequisite: consent of instructor. Pass/Not Pass Only. NOTE: No more than eight units earned in tutoring courses may be counted toward the 180 units required for graduation. Satisfies no degree requirement other than contribution to the 180 unit total.

194A-B Use of the Chemical Literature (2-2) S. Familiarization with bibliographic and computer-based sources of chemical information. Search strategies developed for the retrieval of chemical information by traditional and on-line computerized methods. Emphasis on the use of

Chemical Abstracts and how to access both the printed and machine-readable data files. **194A:** organization and use of printed files. **194B:** use of on-line files. Prerequisite for 194B: 194A.

199 Independent Study in Chemistry (1 to 4 per quarter). The student wishing to pursue an independent study in a special topic should arrange with a member of the staff to sponsor and supervise such work. Prerequisite: consent of instructor.

Graduate

201 Organic Reaction Mechanisms I (4) F. Lecture, three hours. Advanced treatment of basic principles of modern organic chemistry. Topics include molecular orbital theory, orbital symmetry control of organic reactions, aromaticity, carbonium ion chemistry, and free radical chemistry. Prerequisite: Chemistry 130A-B-C or 131A-B-C or equivalent.

202 Organic Reaction Mechanisms II (4) W. Lecture, three hours. Topics include the chemistry of carbenes and carbanions, conformational analysis, photochemistry, electrophilic substitutions, aromatic chemistry. Prerequisite: Chemistry 201.

203 Organic Spectroscopy (4) F. Lecture, three hours. 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 52A-B-C.

204 Organic Synthesis I (4) W. Lecture, three hours. Fundamentals of modern synthetic organic chemistry will be developed. Major emphasis is on carbon-carbon bond forming methodology. Topics include carbonyl annulations, cycloadditions, sigmatropic rearrangements, and organometallic methods. Corequisite: concurrent enrollment in Chemistry 202.

205 Organic Synthesis II (4) S. Lecture, three hours. Fundamentals of modern synthetic organic chemistry will be developed. Major emphasis this quarter is on natural product total synthesis and retrosynthetic (anti-thetic) analysis. Prerequisite: Chemistry 204.

210 Theoretical Chemistry (4). Lecture, three hours. Review of basic quantum mechanics. Development of quantum mechanical models for molecular systems, and applications to the properties of organic, inorganic, and organometallic compounds. Use of orbital symmetry and related arguments for the prediction of molecular structure and reactivity. Prerequisites: Chemistry 130A-B-C or 131A-B-C or equivalent.

213 Chemical Kinetics (4) S. Lecture, three hours. 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) F. Lecture, three hours. 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) W. Lecture, three hours. 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 homogeneous catalysis and organic synthesis are incorporated throughout the course. Prerequisite: Chemistry 107 or 215.

217 Physical Inorganic Chemistry (4) F. Lecture, three hours. 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) W. 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.

220 Bioorganic Chemistry (4) F. 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 52A-B-C or equivalent.

225 Polymer Chemistry (4) W. Lecture, three hours; discussion, one hour. Synthesis and reactions of polymers. Thermodynamics and kinetics of polymerization. Physical characterization of synthetic and natural macromolecules. Prerequisites: Chemistry 51A-B-C or 52A-B-C; 130A-B-C or 131A-B-C or equivalent.

231A-B-C Quantum Chemistry and Spectroscopy. Lecture, three hours; discussion, one hour.

231A Time Independent Quantum Mechanics (4) F. Fundamentals of quantum mechanics. Applications of quantum mechanics to problems in atomic systems are considered. Prerequisites: Chemistry 131A-B-C or equivalent.

231B Time Dependent Quantum Mechanics (4) W. Formal development of time-dependent quantum mechanics. Approximation methods in time-dependent quantum mechanics. Classical and quantum scattering theory. Prerequisite: Chemistry 231A.

231C Molecular Spectroscopy (4) S. Theory and techniques of spectroscopy as used for the study of molecular properties. Conventional spectroscopic methods and coherent time-domain spectroscopies are covered. Prerequisite: Chemistry 231B.

232A Thermodynamics and Introduction to Statistical Mechanics (4) F. 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) W. 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.

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) W. 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.

240 Forensic Chemistry (4). Lecture, three hours. The application of scientific methods, particularly various methods of analytical chemistry, to the field of crime investigation. Physical evidence, methods of examination and analysis, forensic interpretation of the results, and presentation of the results in court. Guest lecturers and illustrations from actual cases. Prerequisite: Chemistry 51A-B-C or 52A-B-C.

251 Special Topics in Organic Chemistry (1 to 4). Advanced topics in organic chemistry. Prerequisite: consent of the instructor.

252 Special Topics in Physical Chemistry (1 to 4). Advanced topics in physical chemistry. Prerequisite: consent of the instructor.

253 Special Topics in Inorganic Chemistry (1 to 4). Advanced topics in inorganic chemistry. Prerequisite: Chemistry 215 or consent of the instructor.

261 Biomolecular Structure (4). Lecture, three hours. Inter- and intramolecular interactions which govern biomolecular structure and organization, and theory of cooperative binding and conformation change in biological systems. Prerequisites: Chemistry 130A-B-C or 131A-B-C or equivalent. Same as Physiology and Biophysics 261.

262 Biopolymers in Solution (4). Lecture, three hours. Electronic, chiroptical, and magnetic resonance spectroscopy as applied to studies of biological molecules and macromolecules. Theoretical and practical aspects of sedimentation equilibrium and transport in the study of biological

macromolecules. Prerequisites: Chemistry 130A-B-C or 131A-B-C or equivalent. Same as Molecular Biology and Biochemistry 262 and Physiology and Biophysics 262.

264 Colloquium in Biophysical Chemistry (2). Colloquium, two hours. Presentations of research on topics in biophysics and biophysical chemistry. Faculty and invited speakers will address the fundamentals and background of physical approaches to biological problems and the experimental results obtained with them. Supplementary reading required. Same as Molecular Biology and Biochemistry 264 and Physiology and Biophysics 264.

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 (1-1-1) F, W, S. Weekly seminars and discussions on general and varied topics of current interest in chemistry. Prerequisite: graduate standing.

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 Organic-Bioorganic Seminar (2) S. Students present public seminars on literature-based research topics in contemporary organic and bioorganic chemistry. Topics to be chosen by student and approved by instructor. Prerequisite: consent of instructor.

299 Independent Study (1 to 4) F, W, S. Prerequisite: consent of instructor.

399 University Teaching (4-4-4) F, W, S. Required of and limited to Teaching Assistants.

Department of Mathematics

420 Physical Sciences I; (714) 856-5503

Ronald J. Stern, *Department Chair*

Faculty

Takeo Akasaki, Ph.D. University of California, Los Angeles, *Associate Professor of Mathematics* (ring theory)

Bruce M. Bennett, Ph.D. Columbia University, *Professor of Mathematics* (algebraic geometry, theory of perception)

Frank B. Cannonito, Ph.D. Adelphi University, *Professor of Mathematics* (group theory)

Rene A. Carmona, Ph.D. Université de Marseille, *Professor of Mathematics* (probability, mathematical physics)

William F. Donoghue, Jr., Ph.D. University of Wisconsin, *Professor of Mathematics* (classical function theory)

Paul C. Eklof, Ph.D. Cornell University, *Professor of Mathematics* (logic and algebra)

Mark Finkelstein, Ph.D. Stanford University, *Associate Professor of Mathematics* (analysis)

Michael D. Fried, Ph.D. University of Michigan, *Professor of Mathematics* (arithmetic geometry, complex variables)

Richard K. Jurgens, Ph.D. University of Minnesota, *Professor of Mathematics* (analysis, differential equations)

Gerhard K. Kalisch, Ph.D. University of Chicago, *Professor Emeritus of Mathematics* (functional analysis)

Abel Klein, Ph.D. Massachusetts Institute of Technology, *Professor of Mathematics* (mathematical physics)

Peter Li, Ph.D. University of California, Berkeley, *Professor of Mathematics* (differential geometry)

Meinhard E. Mayer, Ph.D. Parhon University (Romania), *Professor of Mathematics and Physics* (mathematical physics)

George S. McCarty, Ph.D. University of California, Los Angeles, *Associate Professor of Mathematics* (algebraic topology)

Paul McGill, Ph.D. Queens University of Belfast, Northern Ireland, *Assistant Professor of Mathematics* (probability)

Huseyin A. Nesin, Ph.D. Yale University, *Assistant Professor of Mathematics* (algebra and logic)

David L. Rector, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Mathematics* (algebraic topology, computer algebra)

Robert C. Reilly, Ph.D. University of California, Berkeley, *Associate Professor of Mathematics* (differential geometry)

Bernard Russo, Ph.D. University of California, Los Angeles, *Professor of Mathematics* (functional analysis)
 Martin Schechter, Ph.D. New York University, *Professor of Mathematics* (partial differential equations, functional analysis)
 Stephen Scheinberg, Ph.D. Princeton University; M.D. University of California, Irvine, *Professor of Mathematics* (analysis)
 Israel Michael Sigal, Ph.D. Tel-Aviv University, *Professor of Mathematics* (mathematical physics)
 William H. Smoke, Ph.D. University of California, Berkeley, *Associate Professor of Mathematics* (homological algebra)
 Ronald J. Stern, Ph.D. University of California, Los Angeles, *Department Chair and Professor of Mathematics* (geometry and topology)
 Luen-fai Tam, Ph.D. Stanford University, *Associate Professor of Mathematics* (differential geometry, partial differential equations)
 Kyril Tintarev, Ph.D. Weizmann Institute, Israel, *Assistant Professor of Mathematics* (partial differential equations)
 Edriss Titi, Ph.D. Indiana University, *Assistant Professor of Mathematics* (partial differential equations, nonlinear analysis)
 Howard G. Tucker, Ph.D. University of California, Berkeley, *Professor of Mathematics* (probability and statistics)
 Robert W. West, Ph.D. University of Michigan, *Associate Professor 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 of Mathematics* (analysis)
 Janet L. Williams, Ph.D. Brandeis University, *Professor Emerita of Mathematics* (probability and statistics)
 James J. Yeh, Ph.D. University of Minnesota, *Professor of Mathematics* (analysis)

The Department of Mathematics is engaged in teaching and 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

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.

Requirements for the Bachelor's Degree

University Requirements: See pages 50–53.

School Requirements: See page 196.

Departmental Requirements

Mathematics Major:

1. Mathematics 2A-B-C-D-E (Mathematics H2A-B-C may be substituted for Mathematics 2A-B-C), 3A, 120, 121A-B, and 140A-B-C.
2. Computing skills attained through either Information and Computer Science 21, Engineering E10, or Engineering ECE11A.
3. Physics 5A-B-C or Chemistry 1A-B-C (if taken with accompanying laboratories, also satisfies the breadth requirement in Category II).

4. Two additional courses selected from the following: Mathematics 3D, 13; Physics 5A-B-C-D-E; Chemistry 1A-B-C; Information and Computer Science 22, 23.
5. A three-course sequence in a single foreign language selected from the list given for Category V of the breadth requirement, with the exception that a first-level sequence is acceptable (e.g., German 1A-B-C or R1A-B-C). French, German, or Russian is recommended. (This will also satisfy the School's additional breadth requirement.)
6. Each Mathematics major must select, with the approval of the departmental undergraduate advisor, an area of specialization and complete additional requirements in it. The three specializations are in pure mathematics, applied mathematics, and mathematical statistics. The requirements for each are given below:

A. Mathematics Major with Specialization in Pure Mathematics

Nine upper-division or graduate-level courses selected from the following: Mathematics 111A-B-C, 122A-B-C, 130A-B-C, 141A-B, 142A-B-C, 144A-B, 145A-B-C, 146, 147A-B, 150A-B-C, 162A-B, 210A-B-C, 220A-B-C, and 230A-B-C.

B. Mathematics Major with Specialization in Applied Mathematics

Six upper-division courses selected from the following: Mathematics 105A-B-C, 123A-B-C, 130A-B-C, 131A-B-C, 142A-B-C, 143A-B-C, 144A-B, 146, 150A-B-C, and 171A-B-C. Physics 110A-B-C may be used in place of Mathematics 143A-B-C, and Engineering ECE 181A-B-C may be used in place of Mathematics 171A-B-C.

Three mutually related upper-division one-quarter courses in some field of application. These three courses may be chosen from the preceding list, or may be courses from another department approved in advance by the Mathematics Department Undergraduate Advisor.

C. Mathematics Major with Specialization in Mathematical Statistics

Mathematics 129A-B-C and 129LA-LB-LC and Mathematics 131A-B-C.

Three mutually related upper-division one-quarter courses in some field of application. These courses may be courses chosen from another department, in which case the courses must be approved in advance by the Mathematics Department Undergraduate Advisor, or they may be chosen from the following list of three-quarter sequences: Mathematics 105A-B-C, Mathematics 105A and Mathematics 128A-B, Mathematics 130A-B-C, Mathematics 171A-B-C, or Mathematics 201A-B-C.

NOTE: Mathematics 192, 199, 298, and 299 may not be used to fulfill the course requirements for the major. Students must receive the Undergraduate Advisor's approval prior to enrolling in graduate courses.

Program Requirements for the Minor

The student must select one of three areas of specialization and complete the requirements in that area. The specializations and their corresponding requirements follow:

A. Mathematics Minor with Specialization in Mathematical Statistics

Mathematics 129A-B-C and 129LA-LB-LC and Mathematics 131A-B-C.

Two additional courses selected from Mathematics 105A-B, 128A-B, and 130A-B.

B. Mathematics Minor with Specialization in Pure Mathematics

Mathematics 2D-E, 3A.

Seven courses selected from the following: Mathematics 13, 111A-B-C, 120, 121A-B, 122A-B-C, 130A-B-C, 140A-B-C, 141A-B, 142A-B-C, 144A-B, 146, 150A-B-C, and 162A-B. At least three of these courses must be selected from Mathematics 120, 121A-B, and 140A-B-C.

C. Mathematics Minor with Specialization in Applied Mathematics

Mathematics 2D-E, 3A, or 6A-B-C.

Three courses selected from the following: Mathematics 120, 121A-B, 123A-B-C, 143A-B-C. Physics 110A-B-C may be substituted for Mathematics 143A-B-C.

Four additional courses selected from the preceding list and/or from the following: Mathematics 3D, 105A-B-C, 130A-B-C, 131A-B-C, 140A-B-C, 142A-B-C, 144A-B, 146, 150A-B-C, and 171A-B-C.

Planning a Program of Study

There is a variety of career patterns the Irvine Mathematics major may select. In many instances, a double major (in Mathematics and an appropriate related field) provides the strongest preparation for the career desired.

Assistance in planning a program of study is available from faculty advisors and from the Chief Academic Advisor in the Mathematics Department.

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, functional analysis, geometry and topology, probability and statistics, 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 staff 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, language, and residency requirements, and pass a comprehensive examination administered by the Graduate Studies Committee of the Department.

There are three areas of concentration: Pure Mathematics, Applied Mathematics, and Applied Mathematical Statistics. Each concentration requires the satisfactory completion of 12 upper-division or graduate courses; this includes a core of nine courses (36 units), in each of which the student must earn a grade of B (3.0) or better, and three elective courses (9 to 12 units). At least eight of these courses must be at the graduate level (200-series courses). The specific requirements are described below. A grade point average of at least B (3.0) is required for all courses applicable to the M.S. degree. The student's selection of alternative or elective courses must be approved by the Graduate Studies Committee.

The nine required core courses for the Pure Mathematics concentration are Mathematics 210A-B-C, Mathematics 220A-B-C, and Mathematics 230A-B-C. The student must complete three additional approved courses.

The nine required core courses for the Applied Mathematics concentration are Mathematics 210A-B-C, Mathematics 220A-B-C and the A-B-C sequence of one of the following: Mathematics 201, 292, 295, or Physics 212. The student must complete three additional approved courses; these may be selected from the preceding list.

The nine required core courses for the Applied Mathematical Statistics concentration are Mathematics 201A-B-C and 201LA-LB-LC, Mathematics 202 and 202L, Mathematics 204A-B and 204LA-LB, and either Mathematics 203A-B-C or Mathematics 210A-B-C.

Mathematics 199, 298, 299, and 399 may not be used to fulfill the course requirements for the Master's degree.

Ordinarily, the final examinations in the courses listed below will comprise the comprehensive examination for the Master's degree.

Pure Mathematics: Mathematics 210C, Mathematics 220C, and Mathematics 230C.

Applied Mathematics: Mathematics 210C, 220C, and the C part of the third one-year core course.

Applied Mathematical Statistics: Mathematics 201C, Mathematics 202, and Mathematics 204B.

Students must satisfy the language requirement for the Master's degree by demonstrating reading proficiency in French, German, or Russian. Proficiency in a higher level programming language may be substituted for French, German, or Russian only for the Master's degree with concentration in applied mathematical statistics.

The residency requirement for the Master's degree 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.

Ph.D. in Mathematics

To be admitted to the doctoral program in Mathematics, an applicant normally must have completed a Master's degree in Mathematics with distinction. Under certain circumstances, where there is evidence of deficiencies in preparation, applicants may be required to provide further evidence of the ability to succeed in the Ph.D. program, by performing well, for example, in one or more of the specified comprehensive examinations.

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 examination and dissertation.

After an appropriate period of advanced study, the Graduate Studies Committee will invite the student to prepare for the qualifying examination (or recommend that the student withdraw from the program). This decision will be reached after consultation with the student's faculty advisor and a review of the instructors' evaluations of the student's performance in courses and seminars.

Sample Program — Mathematics Major Specializing in Pure Mathematics

Fall	Freshman Mathematics 2A Elective Language Subject A or Breadth I	Sophomore Mathematics 2D Elective Physics 5C, 5LC Breadth III	Junior Mathematics 120 Mathematics 130A Mathematics 140A Breadth I*	Senior Mathematics 142A Mathematics 150A Breadth IV Elective
Winter	Mathematics 2B Physics 5A Language Breadth I	Mathematics 2E Mathematics 3A ICS 21 Breadth III	Mathematics 121A Mathematics 130B Mathematics 140B Elective	Mathematics 142B Mathematics 150B Breadth IV Elective
Spring	Mathematics 2C Mathematics 13 Physics 5B, 5LB Language	Mathematics 3D Elective ICS 22 Breadth III	Mathematics 121B Mathematics 130C Mathematics 140C Elective	Mathematics 142C Mathematics 150C Breadth IV Elective

* Upper-division writing requirement.

Sample Program — Mathematics Major Specializing in Applied Mathematics

Fall	Freshman Mathematics 2A Elective Language Subject A or Breadth I	Sophomore Mathematics 2D Physics 5C, 5LC ICS 21 Breadth III	Junior Mathematics 120 Mathematics 140A Applications course Breadth IV	Senior Mathematics 105A Mathematics 143A Breadth I* Elective
Winter	Mathematics 2B Physics 5A Language Breadth I	Mathematics 3A Physics 5D, 5LD ICS 22 Breadth III	Mathematics 121A Mathematics 140B Applications course Breadth IV	Mathematics 105B Mathematics 143B Elective Elective
Spring	Mathematics 2C Mathematics 13 Physics 5B, 5LB Language	Mathematics 2E Mathematics 3D Physics 5E or ICS 23** Breadth III	Mathematics 121B Mathematics 140C Applications course Breadth IV	Mathematics 105C Mathematics 143C Elective Elective

* Upper-division writing requirement.

**Mathematics 6A is a prerequisite for ICS 23. Mathematics majors are encouraged, but not required, to meet this prerequisite.

Sample Program — Mathematics Major Specializing in Mathematical Statistics

Fall	Freshman Mathematics 2A Elective Language Subject A or Breadth I	Sophomore Mathematics 2D Elective Physics 5C, 5LC Breadth III	Junior Mathematics 129A, 129LA Mathematics 140A Applications course Breadth IV	Senior Mathematics 120 Mathematics 131A, 131LA Breadth I* Mathematics 130A
Winter	Mathematics 2B Physics 5A Language Breadth I	Mathematics 2E Elective ICS 21 Breadth III	Mathematics 129B, 129LB Mathematics 140B Applications course Breadth IV	Mathematics 121A Mathematics 131B, 131LB Mathematics 130B Elective
Spring	Mathematics 2C Mathematics 13 Physics 5B, 5LB Language	Mathematics 3A Elective ICS 22 Breadth III	Mathematics 129C, 129LC Mathematics 140C Applications course Breadth IV	Mathematics 121B Mathematics 131C, 131LC Mathematics 130C Elective

* Upper-division writing requirement.

The departmental requirements for advancement to candidacy for the Ph.D. degree are: satisfactory performance in Mathematics 210A-B-C, 220A-B-C, 230A-B-C (which can be taken as part of the Master's program) or the equivalent; satisfactory performance at the post-Master's level in three approved year-long graduate courses (nine one-quarter courses) which must exclude Mathematics 201, 202, 204, 210, 220, 230, 298, 299, or 399; satisfactory performance in two language examinations (French, German, or Russian); and satisfactory performance in the oral qualifying examination.

The oral qualifying examination is conducted by a candidacy committee, appointed by the Dean of Graduate Studies and Research on behalf of the Graduate Council, including at least one member of the faculty outside of the Mathematics Department.

After the student meets the requirements, the Graduate Studies Committee recommends to the Dean of Graduate Studies the advancement to candidacy for the Ph.D. degree.

Teaching experience and training is an integral part of the Ph.D. program. All doctoral students are expected to participate in the teaching program of the Department.

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. Following advancement to candidacy, a doctoral committee, appointed by the Dean of Graduate Studies on behalf of the Graduate Council, 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.

Courses in Mathematics

Lower-Division

1 Pre-Calculus Mathematics (4) F, Summer. Lecture, two hours; laboratory, two hours. Prepares student for calculus and other mathematics courses. Inequalities, exponentials, logarithms, trigonometry, elementary analytic geometry, and systems of simultaneous equations. Offered on a self-paced basis, Pass/Not Pass Only. Satisfies no requirements other than contribution to the 180 units required for graduation.

1A-B Pre-Calculus. Lecture, three hours; discussion, two hours. Mathematics 1A and 1B are equivalent to Mathematics 1 and may not be taken if the student has passed Mathematics 1.

1A (0) F,W. Basic equations and inequalities, linear and quadratic functions, and systems of simultaneous equations. Four units of workload credit only.

1B (4) W,S. 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 or consent of instructor.

2A-B-C Calculus and Differential Equations. Lecture, three hours; quiz, two hours. Prerequisite: Mathematics 1 or 1B. Waiver of prerequisites: at certain times throughout the year, the Mathematics Department will offer an examination for those who wish to waive the Mathematics 1 or 1B prerequisite. Examination must be passed within one year prior to enrolling in Mathematics 2A. In addition, waiver of prerequisites may be granted by consent of instructor.

2A Calculus (4) F, W, S, Summer. Introduction to derivatives, calculation of derivatives of algebraic functions, and applications of derivatives (approximations, curve plotting, related rates, maxima and minima). Indefinite integrals. Fundamental theorem of calculus. Differentiation and integration of sines and cosines. (V)

2B Calculus (4) F, W, S, Summer. Definite integrals, their applications (areas, volumes, etc.), and methods of integration. Logarithmic and exponential functions. Polar coordinates. Prerequisite: Mathematics 2A. (V)

2C Calculus and Differential Equations (4) F, W, S, Summer. Sequences, infinite series, and Taylor series. Linear differential equations with constant coefficients. Numerical methods and series solutions. Applications. Prerequisite: Mathematics 2B. (V)

2D-E Calculus in Two- and Three-Dimensions. Lecture, three hours; quiz, two hours.

2D (4) F, W, Summer. Differential and integral calculus of real-valued functions of several real variables, including applications and preliminary geometry. Prerequisites: Mathematics 2A-B. Formerly Mathematics 3B.

2E (4) W, S. 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: Mathematics 2D. Formerly Mathematics 3C.

3A Introduction to Linear Algebra (4) F, W, S, Summer. Lecture, three hours; quiz, two hours. Vectors, matrices, linear transformations, dot products, determinants, systems of linear equations, vector spaces, sub-

spaces, dimension. Prerequisites: Mathematics 2A-B-C. NOTE: It is suggested that students take Mathematics 2D before Mathematics 3A.

3D Elementary Differential Equations (4) W, S. Lecture, three hours; quiz, two hours. Linear differential equations, variation of parameters, constant coefficient cookbook, systems of equations, Laplace transforms. As time permits, further topics from linear partial differential equations and separation of variables, stability, numerical methods. Corequisite: Mathematics 2D. Prerequisites: Mathematics 2A-B-C, 3A.

6 Discrete Mathematics. Lecture, three hours; quiz, two hours. The three quarters are independent of each other and may be taken in any order. Prerequisite: high school mathematics through trigonometry. Designed for Information and Computer Science majors; students are expected to have a strong mathematical background.

6A Combinatorics (4) F. Basic counting methods, binomial coefficients, graph theory, generating functions, recurrence relations, inclusion-exclusion, Polya's formula. (V)

6B Boolean Algebra and Logic (4) W. Boolean algebra, finite state machines, formal languages, formal logic. (V)

6C Linear Algebra (4) S. Linear equations, vector spaces and subspaces, linear functions and matrices, linear codes, determinants, scalar product. (V)

7 Basic Statistics (4) F, W, S, Summer. Lecture, three hours; quiz, two hours. 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. (V)

13 Introduction to Abstract Mathematics (4) F, W, S. Lecture, three 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. Strongly recommended for freshman and sophomore Mathematics majors as preparation for upper-division courses such as Mathematics 120 and 140. (V)

H90A-B-C The Idiom and Practice of Science (4-4-4) F, W, S. 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 calculus, radiation, Newton's Laws, chemical and biochemical reaction rates, epidemics, atmospheric chemistry and physics, and earthquake physics. Prerequisite: restricted to members of the Campuswide Honors Program or consent of instructor. Same as Chemistry H90A-B-C and Physics H90A-B-C. (II)

Upper-Division

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 quarterly *Schedule of Classes* for specific information.

105A-B-C Numerical Analysis (4-4-4) F, W, S. Lecture, three hours. Introduction to methods, pitfalls, applications of practical numerical computation; discussion of accuracy, stability, and efficiency of several standard numerical methods; function approximation, solution of polynomial equations, linear systems of algebraic equations, the algebraic eigenvalue problem; interpolation, quadrature, initial and boundary value problems, fast Fourier transform. Prerequisites: Mathematics 2A-B-C and some acquaintance with the elements of linear algebra, differential equations, Fourier series, and computer programming. Corequisite: concurrent enrollment in 105LA-LB-LC, when offered.

105LA-LB-LC Numerical Analysis Laboratory (2-2-2) F, W, S. Laboratory, one hour plus computer projects. Illustration of numerical algorithms, analysis of data to infer behavior of mathematical systems, programming in FORTRAN, use of a numerical software package. Corequisite: concurrent enrollment in Mathematics 105. Prerequisite: programming experience in a higher level language. Offered at discretion of instructor of Mathematics 105.

111A-B-C Projective Geometry (4-4-4). Lecture, three hours. Elementary plane projective geometry. Axioms, the real projective plane, finite geometries, Desargues' theorem, Pappus and Pascal theorems, coordinate systems.

120 Introduction to Abstract Algebra (4) F. Lecture, three hours. Introduction to groups, rings, and fields with a detailed look at permutation groups, congruence classes of integers, modulo n , and polynomials. Students are expected to do original proofs. Corequisite: Mathematics 3A. Mathematics 13 is strongly recommended.

121A-B Linear Algebra (4-4) W, S. Lecture, three hours. Theory of vector spaces, linear functions and their matrix representation, determinants, similarity of matrices and corresponding canonical forms, inner products. Computational technique from Mathematics 3A will be assumed. Students are expected to do original proofs. Prerequisites: Mathematics 3A and 120, or consent of instructor. Mathematics 13 is strongly recommended.

122A-B-C Elementary Number Theory (4-4-4). Lecture, three hours. Primes, congruences, diophantine equations, quadratic reciprocity, and selected other topics. Prerequisite: one year of college mathematics.

123A-B-C Applied Modern Algebra (4-4-4) F, W, S. Lecture, three hours. Groups, symmetry groups, Polya enumeration; rings and fields, polynomial rings, coding theory; invariants of groups, generating functions. Prerequisite: Mathematics 3A or 6C. NOTE: Mathematics 120 may be substituted for Mathematics 123A in this sequence.

128A Mathematics of Finance (4). Lecture, three hours. Mathematical theory of interest: measurement of interest, accumulation and discount, equations of value, annuities and perpetuities, amortization and sinking funds, yield rates, bonds, depreciation, depletion. Topics covered are those included in the section on interest in the third actuarial examination. Prerequisites: Mathematics 2A-B-C. Not offered 1991-92.

128B Mathematical Foundations of Life Contingencies (4). Lecture, three hours. A rigorous mathematical development of single-life functions, multi-life functions, and multiple decrement functions. Mathematics 128A-B prepares the student for the fourth actuarial examination. Prerequisites: Mathematics 2A-B-C, 128A, and either Mathematics 129A or 131A. Not offered 1991-92.

129A-B-C Mathematical Theory of Sample Surveys (4-4-4) F, W, S. Lecture, three hours. Basic concepts of discrete probability, 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. Corequisite: concurrent enrollment in 129LA-LB-LC. Prerequisites: Mathematics 2A-B-C.

129LA-LB-LC Sample Surveys Laboratory (1-1-1) F, W, S. Laboratory, two hours. Sampling from known populations for practical verification of the theory developed in Mathematics 129. Corequisite: concurrent enrollment in Mathematics 129.

130A-B-C Probability and Stochastic Processes (4-4-4) F, W, S. Lecture, three hours. Introductory course emphasizing applications. Discrete and continuous probability distributions. Distributions of sums and limit theorems. Markov chains and stochastic processes. Prerequisites: Mathematics 2A-B-C.

131A-B-C Mathematical Statistics (4-4-4) F, W, S. Lecture, three hours. Introduction to probability and mathematical statistics. Probability distributions. Expectation. Point estimation and confidence intervals. Fundamental theory of hypothesis testing. Applications. Corequisite: concurrent enrollment in 131LA-LB-LC, when offered. Prerequisites: Mathematics 2A-B-C.

131LA-LB-LC Mathematical Statistics Laboratory (1-1-1) F, W, S. Laboratory, two hours. Applications to concrete problems of the theory developed in Mathematics 131. Corequisite: concurrent enrollment in Mathematics 131.

139 Technical Writing and Communication Skills (4) F, W, S. Lecture, four 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 to Mathematics majors only. Same as Chemistry 139 and Physics 139.

140A-B-C Elementary Analysis (4-4-4) F, W, S. Lecture, three hours. Introduction to real analysis, including real number system, infinite series, sequences of functions, differentiation, integration, and elements of the

calculus of scalar- and vector-valued functions of several variables. Students are expected to do proofs. Prerequisites: Mathematics 2D-E, 3A. Mathematics 13 is strongly recommended.

141A-B Introduction to Topology. Lecture, three hours. Strongly recommended for students planning to take graduate courses in mathematics.

141A Metric Spaces (4) W. Elements of naive set theory and the basic properties of metric spaces. Prerequisite: Mathematics 140A.

141B Point Set Topology (4) S. Introduction to topological spaces and topological properties. Prerequisite: Mathematics 141A or consent of instructor.

142A-B-C Differential Equations (4-4-4) F, W, S. Lecture, three hours. Introductory theoretical course in ordinary and/or partial differential equations. Existence and uniqueness of solutions, methods of solution, the geometry of solutions. Prerequisites: Mathematics 2D, 3A, and either 2E or 3D, the latter being strongly recommended.

143A-B-C Methods of Mathematical Physics (4-4-4) F, W, S. Lecture, three hours. Introduction to applied mathematics, especially differential equations, for physical sciences and engineering students. 143A: ordinary differential equations; methods of solution, applications, existence, uniqueness and stability, linear equations with constant and variable coefficients, and the Laplace transform. 143B: series expansions; complex analysis; Fourier series; and introductory partial differential equations. 143C: partial differential equations and their applications. Prerequisites: Mathematics 2D-E, 3A, or consent of instructor. Same as Physics 110A-B-C.

144A-B Introduction to Complex Variables (4-4) W, S. Lecture, three hours. Complex numbers, analytic functions. Riemann mapping theorem with applications to boundary value problems. Theory of residues, power series expansions. Prerequisites: Mathematics 2D-E, 3A. Mathematics 140A is recommended.

145A-B-C Topics in Analysis (4-4-4). Lecture, three hours. Topics not usually covered in Mathematics 140A-B-C such as Fourier series, calculus of variations, operational calculus, integral equations. Prerequisites: Mathematics 140A-B-C.

146 Fourier Series (4) S. Lecture, three hours. Introduction to the theory of Fourier series and orthogonal expansions; applications to partial differential equations such as vibrating strings. Prerequisites: Mathematics 2D, 3A.

149A-B-C Math History for Mathematicians (4-4-4). Lecture, three hours. Broad survey of the evolution of mathematical concepts from ancient to modern times. Many mathematical exercises. Prerequisites: Mathematics 2A-B-C and three other mathematics courses, or consent of instructor. Not offered 1991-92.

150A-B-C Mathematical Logic (4-4-4) F, W, S. Lecture, three hours. Introductory course in mathematical logic. One quarter will cover set theory, including an axiomatic development, and cardinal and ordinal numbers. Two quarters will be concerned with logic and recursion theory, including effective procedures, propositional and predicate calculus, and incompleteness and undecidability. Prerequisite: consent of instructor. Mathematics 150A-B-C and Philosophy 130A-B-C may not both be taken for credit.

162A-B Introduction to Differential Geometry (4-4). Lecture, three hours. Applications of advanced calculus and linear algebra to the geometry of curves and surfaces in space. Prerequisites: Mathematics 2D-E and 3A.

171A-B-C Mathematical Methods in Operations Research. Lecture, three hours. Prerequisite: consent of instructor. Same as Engineering EE181A-B-C.

171A Linear Programming (4). Simplex algorithm, duality, optimization in networks.

171B Nonlinear Programming (4). Conditions for optimality, quadratic and convex programming, geometric programming, search methods.

171C Integer and Dynamic Programming (4). Multistage decision models, applications.

175A-B-C Modern Mathematical Methods in Physics (4-4-4). Lecture, three hours. Introduction to manifold theory, dynamical systems, func-

tional analysis, nonlinear analysis with the emphasis on effective tools rather than on an abstract framework. Applications to physics ranging from turbulence in fluid dynamics to instantons in field theory. No prior knowledge of these topics assumed. Prerequisites: Mathematics 2D, 3A. Recommended: Mathematics 2E, 121A, and 140A-B-C. Same as Mathematics 275A-B-C.

185 Foundations of Logic Programming (4). Lecture, three hours. Horn clause logic, models, the term algebra, unification, automatic theorem proving by SLD resolution, basic technique of logic programming, completeness theorems, effect of the cut and occurs-check. Programming examples in PROLOG. Prerequisites: a three-quarter series selected from Mathematics 150A-B-C, 123A-B-C, or 120 and 121A-B, or consent of instructor. Programming experience required.

186 Foundations of Functional Programming (4). Lecture, three hours. Recursive functions, typed and untyped lambda-calculus, basic technique of functional programming, models, fixed point and recursion, incompleteness theorem, automatic type inference. Programming examples in SCHEME (LISP) and ML. Prerequisites: a three-quarter series selected from Mathematics 150A-B-C, 123A-B-C, or 120 and 121A-B, or consent of instructor. Programming experience required.

187 Foundations of Algebraic Specification (4). Lecture, three hours. Algebraic structures: groups, rings, formal logics, quotients, free structures, generators and relations, multi-sorted algebra. Elements of category theory: categories and functions, examples from algebra and formal logic, initial and final objects. Applications to initial semantics. Programming examples in OBJ3. Prerequisites: a three-quarter series selected from Mathematics 150A-B-C, 123A-B-C, or 120 and 121A-B, or consent of instructor. Programming experience required.

192 Tutoring in Mathematics (1 to 4 per quarter). Students may enroll in a section of this course to earn course credit for tutoring associated with the Physical Sciences Peer Tutoring Program or for activities as a student assistant in some specific mathematics course. Admission to the course depends on demonstration of suitable qualifications and approval of the instructor in charge. Prerequisite: consent of instructor. Pass/Not Pass Only. NOTE: No more than eight units earned in tutoring courses may be counted toward the 180 units required for graduation. Satisfies no degree requirement other than contribution to the 180 unit total.

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

201A Theory of Mathematical Statistics (4) F. Lecture, three hours. Review of probability and sampling distributions. Point and interval estimation, sufficient statistics, hypothesis testing, analysis of categorical data, the multivariate normal distribution, sequential analysis. Prerequisites: Mathematics 131A-B-C, 120, and 121A-B or consent of instructor. Corequisite: concurrent enrollment in Mathematics 201LA.

201B Linear Regression Analysis (4) W. Lecture, three hours. The normal linear regression model, confidence ellipsoids for regression coefficient vectors, the F-test and its applications to one- and two-way analysis of variance, analysis of covariance and a test for independence, simultaneous confidence intervals. Prerequisite: Mathematics 201A. Corequisite: concurrent enrollment in Mathematics 201LB.

201C Experimental Design (4) S. Lecture, three hours. Analysis of variance for the linear regression and other models, Latin squares, incomplete blocks, nested designs, random effects model, randomization models, confounding. Prerequisite: Mathematics 201B. Corequisite: concurrent enrollment in Mathematics 201LC.

201LA-LB-LC Graduate Statistics Laboratory (2-2-2) F, W, S. Laboratory, two hours. Applications to concrete problems of the theory developed in Mathematics 201A, 201B, 201C. Oral and written reports, practice in professional consulting, development of statistical computing expertise. Corequisites: concurrent enrollment in corresponding segment of Mathematics 201A, 201B, 201C.

202 Nonparametric Statistical Inference (4) F. Lecture, three hours. Standard nonparametric tests for comparison of two or more treatments,

tests for randomness and independence. Corequisites: Mathematics 201A and concurrent enrollment in 202L.

202L Nonparametric Statistics Laboratory (2) F. Laboratory, two hours. Applications to concrete problems of the theory developed in Mathematics 202. Oral and written reports, practice in professional consulting, development of statistical computing expertise. Corequisite: concurrent enrollment in Mathematics 202.

203A-B-C Topics in Mathematical Statistics (4-4-4) F, W, S. Lecture, three hours. Topics include survival analysis, risk theory, discriminant analysis, time-series analysis, statistical decision theory, or sequential analysis. Prerequisites: Mathematics 201A-B-C.

204A-B Multivariate Statistical Analysis (4-4) W, S. Lecture, three hours. The Wishart distribution, Hotelling's T^2 -test and its applications, growth curves, multivariate analysis of variance, discriminant analysis, principal components, and canonical correlations. Prerequisite: Mathematics 201A. Corequisites: Mathematics 201B and concurrent enrollment in 204LA-LB.

204LA-LB Multivariate Statistics Laboratory (2-2) W, S. Laboratory, two hours. Applications to concrete problems of the theory developed in Mathematics 204A-B. Oral and written reports, practice in professional consulting, development of statistical computing expertise. Corequisite: concurrent enrollment in corresponding segment of Mathematics 204A-B.

210A-B-C Real Analysis (4-4-4) F, W, S. Lecture, three hours. Measure theory, Lebesgue integral, L_p spaces. Radon-Nikodym theorem, differentiation, metric spaces, Banach spaces, Daniell integral. Prerequisites: Mathematics 140A-B-C or equivalent or consent of instructor.

211A-B-C Topics in Real Analysis (4-4-4). Lecture, three hours. A continuation of Mathematics 210A-B-C; topics selected by instructor. Not offered 1991-92.

216A-B-C Observer Theory (4-4-4) F, W, S. Lecture, three hours. A new theory of the observer providing a framework for the mathematical analysis of perception/cognition and of its relation to the physical world. Prerequisites: familiarity with mathematical analysis and abstract mathematical structures; consent of instructor. Same as Social Sciences 243G-H-I.

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.

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 120 and 121A-B or equivalent, or consent of instructor.

NOTE: Courses numbered 231 through 295 are not offered every year. In addition to the courses listed below, other courses are offered as interest and demand dictate.

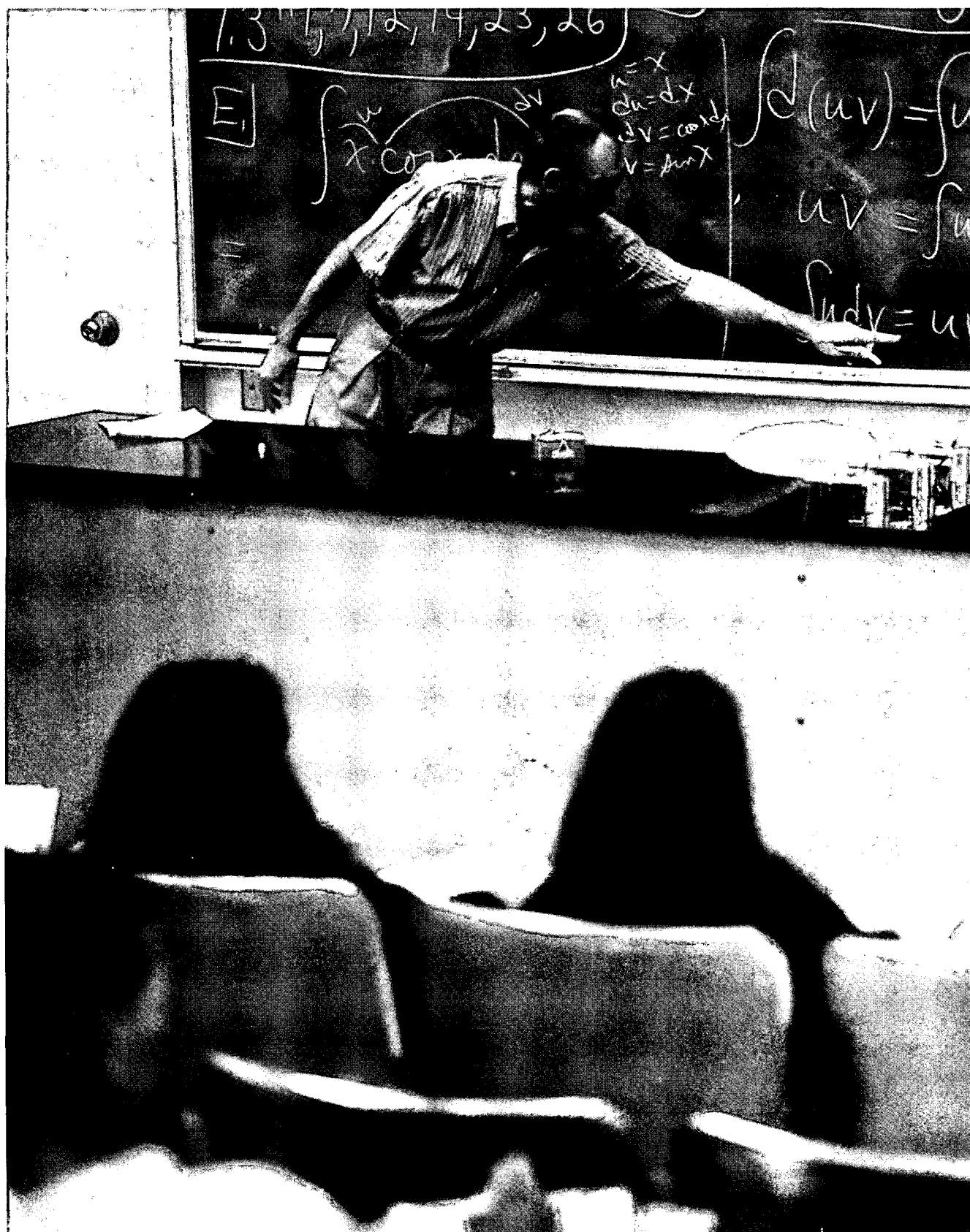
234A-B-C Topics in Algebra (4-4-4). Lecture, three hours. Group theory, homological algebra, and other selected topics. Prerequisites: Mathematics 230A-B-C or consent of instructor.

240A-B-C Differential Geometry (4-4-4). Lecture, three hours. Differential manifolds, differential forms, integrations, introduction to Lie groups, connections, Riemannian manifolds, curvature and topology, calculus of variations in the large, immersions and imbeddings. Prerequisite: Mathematics 141A-B or consent of instructor.

250A-B-C Algebraic Topology (4-4-4). Lecture, three hours. Topics vary with instructor. Prerequisites: Mathematics 230A and 141A-B, or equivalent, or consent of instructor.

260A-B-C Functional Analysis (4-4-4). Lecture, three hours. Elements of Banach space theory, operator theory, Banach algebra theory including structure theory of commutative algebras and spectral theory in Hilbert space. Prerequisites: Mathematics 210A-B-C and 220A-B-C or consent of instructor.

261A-B-C Operator Theory (4-4-4). Lecture, three hours. Elements of topological linear spaces, Hilbert spaces, spectral theorems and multiplicity theory, rings of operators, representation of groups and rings. Prerequisites: Mathematics 210A-B-C or consent of instructor.



All initial courses of study for Chemistry, Mathematics, and Physics majors include mathematics through calculus, and calculus is a prerequisite for much of the upper-division work in each major. Shown above is Associate Professor of Mathematics George S. McCarty's calculus course.

268A-B-C Topics in Functional Analysis (4-4-4). Lecture, three hours. Selected topics such as spectral theory, abstract harmonic analysis, Banach algebras, operator algebras. Prerequisite: 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.

274A-B-C Topics in Probability (4-4-4). Lecture, three hours. Prerequisites: Mathematics 270A-B-C or consent of instructor.

275A-B-C Modern Mathematical Methods in Physics (4-4-4). Lecture, three hours; discussion, one hour. Introduction to manifold theory, dynamical systems, functional analysis, nonlinear analysis with the emphasis on effective tools rather than on an abstract framework. Applications to physics ranging from turbulence in fluid dynamics to instantons in field theory. No prior knowledge of these topics assumed. Prerequisite: Mathematics 2D, 3A. Recommended: Mathematics 2E, 121A, and 140A-B-C. Same as Mathematics 175A-B-C.

280A-B-C Mathematical Logic (4-4-4). Lecture, three hours. Prerequisite: consent of instructor.

292A-B-C Applied Mathematics (4-4-4) F, W, S. Lecture, three hours. Mathematical techniques and methods applied to specific questions in physics, chemistry, and engineering. Background material in science and mathematics introduced as needed. Prerequisites: Mathematics 140A-B-C or consent of instructor. May be repeated for credit.

294A, B, C Applied Nonlinear Analysis (4-4-4). Lecture, three hours. Methods for nonlinear problems in mathematics, science, and engineering. Includes perturbation techniques, variational methods, bifurcation, degree theory, Newton's methods, implicit functions, minimax theorems, optimal control. Background material presented as needed. Each quarter may be taken independently. Prerequisite: Mathematics 210A or consent of instructor.

295A-B-C Partial Differential Equations (4-4-4). Lecture, three hours. Local and global theory of partial differential equations: analytic, geometric, and functional analytic methods. Prerequisites: Mathematics 210A-B-C or equivalent or consent of instructor.

296 Topics in Partial Differential Equations (4) S. Topics in partial differential equations, e.g., distributions, pseudo-differential operators, microanalysis. Prerequisites: Mathematics 295A-B-C. May be repeated for credit once as topic changes.

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 (2 to 12) F, W, S. 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.

Department of Physics

4129 Physical Sciences II; (714) 856-6911

Walter E. Bron, **Department Chair**

Faculty

Minko Balkanski, Ph.D. Ecole Normale Supérieure (France), *Adjunct Professor of Physics* (experimental condensed matter physics)

Myron Bander, Ph.D. Columbia University, *Professor of Physics* (elementary particle theory)

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Gregory A. Benford, Ph.D. University of California, San Diego, *Professor of Physics* (plasma physics and astrophysics)

Walter E. Bron, Ph.D. Columbia University, *Department Chair and Professor of Physics* (experimental condensed matter physics, laser science)

Gary A. Chanan, Ph.D. University of California, Berkeley, *Professor of Physics* (experimental astrophysics)

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Rognvald Garden, Ph.D. University of Edinburgh (Scotland), *Assistant Professor of Physics* (experimental astrophysics)

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Roger D. McWilliams, Ph.D. Princeton University, *Vice Chair of the Department (Undergraduate Affairs) and Associate Professor of Physics* (experimental plasma physics)

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William R. Molzon, Ph.D. University of Chicago, *Associate Professor of Physics* (experimental particle physics)

Riley Newman, Ph.D. University of California, Berkeley, *Professor of Physics* (experimental particle physics and gravitational physics)

Lewis Nosanow, Ph.D. University of Chicago, *Professor of Physics* (condensed matter theory)

William H. Parker, Ph.D. University of Pennsylvania, *Associate Executive Vice Chancellor and Professor of Physics* (experimental condensed matter physics)

Frederick Reines, Ph.D. New York University, *Distinguished Professor Emeritus of Physics and Radiological Sciences* (experimental particle physics)

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Gaurang B. Yodh, Ph.D. University of Chicago, *Vice Chair of the Department (Graduate Affairs) and Professor of Physics* (experimental particle physics)

Clare Yu, Ph.D. Princeton University, *Assistant Professor of Physics* (condensed matter theory)

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 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 elementary particles, plasma physics, astrophysics, and condensed matter at both advanced and undergraduate course levels. The faculty is vigorous, innovative, and engaged in everything from the traditional activities of research, education, and university service to community action, literature, and national policy making, to mention a few examples. The Department encourages student-faculty interaction. The Department consists of people committed to intellectual activities and is exciting to those who are so inclined.

Undergraduate Program

Courses in the Physics Department are designed to meet the needs of many kinds of students, from those students without facility in mathematics whose main interests lie in the humanities or the arts to those students with professional goals in science and engineering. The Physics major, concentrations in Applied Physics and Biomedical Physics, and a specialization in Astrophysics are offered. 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 in the following table:

Physics 3	Physics 5	Physics 16-24
Intended Audience Premedical students, Biological Sciences majors	Physics, Chemistry, Mathematics, and Engineering majors	Nonscience majors
Prerequisites Algebra and trigonometry; concurrent enrollment in Math 2	Math 2A (Calculus); Physics 1 or passing score on physics placement test.	None
Preparation for Advanced Courses Physics 5C with permission	All upper-division courses in physics	None

Requirements for the Bachelor's Degree

University Requirements: See pages 50-53.

School Requirements: See page 196.

Departmental Requirements

Physics 5A-B-C-D-E with laboratory courses 5LB-LC-LD-LE; Physics 110A-B-C, 111A-B, 112A-B, 113A-B, and 115; two quarters of advanced laboratory (Physics 150-153); Mathematics 2A-B-C-D-E and 3A; and three additional coherently related four-unit upper-division courses chosen from the Schools of Physical Sciences, Biological Sciences, Engineering, or the Department of Information and Computer Science. Students who complete a program in Applied Physics, Biomedical Physics, or Astrophysics fulfill this requirement with course work taken in satisfaction of concentration or specialization requirements.

Requirements for the Concentration in Applied Physics

The requirements of the concentration in Applied Physics include all the requirements of the Physics degree *plus* six courses in engineering approved by the Physics Department. One quarter of the advanced laboratory requirement may be waived with appropriate engineering laboratory work.

Requirements for the Concentration in Biomedical Physics

The requirements of the concentration in Biomedical Physics include all the requirements of the Physics degree *plus* the following: Biological Sciences 101, 103, and 104 with associated laboratories; Chemistry 1A-B-C with laboratory; a three or four quarter sequence of courses in a specific area. Suggested sequences are as follows:

1. Chemistry 51A-B with laboratory; Biological Sciences 106 and 107
2. Biological Sciences 105 plus two Psychobiology courses
3. Chemistry 130A-B-C
4. Radiological Sciences 201A-B plus one additional Radiological Science course

Sequences other than those above may be acceptable; approval must be obtained in advance from the program coordinator.

Requirements for the Specialization in Astrophysics

The requirements of the specialization in Astrophysics include all the requirements of the Physics degree *plus* the three astrophysics courses (Physics 137, 144, 145) and any two of the four special topics courses (Physics 132, 134, 135, 136).

Introductory course work in computer programming (ICS 21, Engineering 10, or Engineering ECE11A) and Mathematics 3D are very strongly recommended during the freshman or sophomore years.

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 two quarters of Honors Research (Physics H195) and a two-unit Honors Seminar (Physics H196) during 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.

Additional information and program applications are available in the Department Office.

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 with strong orientation toward modern physics. Laboratory work accompanies the course. Nonscience majors with some mathematical skill may wish to consider Physics 3 as an alternative to Physics 16 through 24.

A student who decides to major in Physics after completing Physics 3 with a grade of A or B may, with the consent of the

Department, enroll in Physics 5C. The premedical physics requirements may be met with Physics 3 or with Physics 5A-B-C.

Physics 1 (or a satisfactory examination score as explained in the Physics 5A course description) is a prerequisite for the Physics 5 sequence and offers a review of math and problem-solving techniques in the context of introducing physics.

Physics 5 is an intensive five-quarter course for students in physics, chemistry, engineering, and other areas who are interested in a careful quantitative approach to the subject. Laboratory work accompanies the course. Students expecting to enroll in the entire five-quarter sequence of Physics 5 should enroll in Mathematics 2D concurrently with Physics 5C. Students planning to enroll in only three quarters of Physics 5 need not enroll in Math-

Sample Program — Physics

A typical course program for Physics majors considering the possibility of graduate study in physics is shown below.

	Freshman	Sophomore	Junior	Senior
Fall	Mathematics 2A Chemistry 1A Physics 1 Elective/Breadth	Mathematics 2D Physics 5C, 5LC Elective/Breadth Elective/Breadth	Physics 110A Physics 111A Elective/Breadth Elective/Breadth	Physics 113A Physics 151 Physics 112B Elective/Breadth
Winter	Mathematics 2B Chemistry 1B Physics 5A Elective/Breadth	Mathematics 2E Physics 5D, 5LD Elective/Breadth Elective/Breadth	Physics 110B Physics 111B Elective/Breadth Elective/Breadth	Physics Elective Physics 113B Physics 115 Elective/Breadth
Spring	Mathematics 2C Chemistry 1C Physics 5B, 5LB Elective/Breadth	Mathematics 3A Physics 5E, 5LE Elective/Breadth Elective/Breadth	Physics 110C Physics 112A Elective/Breadth Elective/Breadth	Physics 153 Physics 113C Elective/Breadth Elective/Breadth

A typical course program for Physics majors in the **Biomedical Physics** concentration differs from the Physics major program in the sophomore, junior, and senior years.

	Sophomore	Junior	Senior
Fall	Physics 5C, 5LC Mathematics 2D Bio. Sci. 101 Elective/Breadth	Physics 110A Physics 111A Program Elective Bio. Sci. 104, 104L	Physics 113A Physics 112B Elective/Breadth Elective/Breadth
Winter	Physics 5D, 5LD Mathematics 2E Elective/Breadth Elective/Breadth	Physics 110B Physics 111B Program Elective Elective/Breadth	Physics 113B Physics 152 Physics 115 Elective/Breadth
Spring	Physics 5E, 5LE Mathematics 3A Bio. Sci. 103 103L Elective/Breadth	Physics 110C Physics 112A Program Elective Elective/Breadth	Physics 113C Physics 153 Elective/Breadth Elective/Breadth

Sample Program — Astrophysics

	Freshman	Sophomore	Junior	Senior
Fall	Mathematics 2A Physics 1 Elective/Breadth Elective	Mathematics 2D Physics 5C, 5LC ICS 21/Engineering 10 Elective/Breadth	Physics 110A Physics 111A Physics 135 Elective/Breadth	Physics 112B Physics 113A Physics 151 Elective/Breadth
Winter	Mathematics 2B Physics 5A Elective/Breadth Elective	Mathematics 3A Physics 5D, 5LD Elective/Breadth Mathematics 2E	Physics 110B Physics 111B Physics 144 or 145 Elective/Breadth	Physics 115 Physics 113B Physics 134 or 136 Physics 144 or 145
Spring	Mathematics 2C Physics 5B, 5LB Elective/Breadth Elective	Mathematics 3D Physics 5E, 5LE Elective/Breadth Elective/Breadth	Physics 110C Physics 112A Physics 137 Elective/Breadth	Physics 113C Physics 153 Physics 132 Elective/Breadth

ematics 2D. Biological Sciences majors with facility in calculus should consider Physics 5 as an alternative to Physics 3.

Physics courses numbered between 16 and 24 are general education courses intended for nonscience majors. The content and format of Physics 21 through 24 will vary from year to year. In general, these courses will not include regular laboratory work.

Courses numbered 110 and above are for Physics majors and other qualified students. This series of courses in the upper-division curriculum is sufficiently broad to provide programs both for the Physics major who does not intend to pursue the study of physics beyond the Bachelor's degree level and for the Physics major preparing for a professional career in physics. Courses numbered between 110 and 116 emphasize the mathematical and theoretical structures that have unified our understanding of nature. It should be noted that multi-quarter courses such as 113A-B-C must be taken and passed in sequential order. Courses numbered between 130 and 149 emphasize particular domains of the structure of matter. The Physics major with a career goal, for example, in medicine, law, teaching, or business should emphasize the Physics 130 series, which covers most of the important phenomena of physics. Any Physics major who is so inclined may take more than the minimum two quarters of advanced laboratory work. Laboratory work is assigned to separate courses, numbered 150 to 153.

Transfer students are specifically advised to seek individual consultation with a member of the Physics faculty before deciding on a program of courses.

Since many graduate physics departments require a reading knowledge of one foreign language, Physics majors planning graduate work should, if possible, study some Russian, German, or French. Introductory courses in biology and chemistry are also recommended options. Every Physics major should avoid overspecialization and wisely use undergraduate years to explore some areas remote from physics.

Note also that alternatives to Physics major requirements can be approved upon petition to the Department and the Office of the Associate Dean. For example, exceptionally prepared students and/or Mathematics-Physics double majors may be allowed to substitute certain mathematics courses (Mathematics 140A-B-C, 142A-B-C, 144A-B) for Physics 110. Furthermore, exceptionally prepared students are allowed to enroll in graduate-level courses; to do so requires the approval of the Physics Department Undergraduate Committee.

As a guide to preparing a suitable program, the Department makes the following suggestions:

Physics majors considering the possibility of graduate school in engineering should complete the Applied Physics requirements.

The course program of Physics majors considering graduate work in chemistry, biology, or various interdisciplinary areas should contain: Chemistry 1A-B-C and 51A-B-C, and Biological Sciences 101, 103, and 104.

The concentration in Biomedical Physics is offered for Physics majors who wish to follow an integrated program which combines biology and/or chemistry with physics, and is suitable preparation for a graduate career in one of these interdisciplinary areas.

The course program of Physics majors considering a teaching career in the public schools or the community colleges should contain: Education 173 and 174, and additional preparation in some other area of science or mathematics. Courses from the Physics 16 through 24 sequence may be appropriate.

The course program of Physics majors considering graduate work in the history of science should contain courses from History 60 and 186, Philosophy 60 and 160. Courses from the Physics 16 through 24 sequence may be appropriate.

Sample Program—Applied Physics

The Applied Physics concentration within the Physics undergraduate degree program 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, particularly electrical engineering courses. In addition to the basic courses in physics, a student is required to complete six courses in the School of Engineering approved by the Physics Department. Examples of appropriate courses include Engineering ECE75; ECE110A, ECE110B, ECE113, ECE114A, ECE114B, ECE176, ECE178, ME120, ME135, and ME147. Upon completion of the Applied Physics concentration, the student will receive a B.S. degree in Physics.

Sample Programs — Applied Physics

	Junior	Senior
Fall	Physics 110A Physics 111A Engr. ECE113 Elective	Physics 112B Physics 113A Physics 151 Engr. ECE114A or ECE176
Winter	Physics 110B Physics 111B Engr. ECE110A Elective	Physics 113B Physics 115 Physics 151 Engr. ECE114B or ECE178
Spring	Physics 110C Physics 112A Engr. ECE110B Elective	Physics 113C Physics 133 Engr. Elective Elective

A typical course program for Physics majors in the Applied Physics concentration differs from the Physics major program primarily in the junior and senior years. NOTE: Most upper-division Engineering courses have several lower-division prerequisites which should be completed before the junior year.

Program Planning—Biomedical Physics

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 six quarters of basic courses in biology and chemistry (see table).

A sequence of three or four integrated additional courses which must be approved by the program coordinator completes the program. 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 first and second years is essential.

Program Planning—Astrophysics

The Astrophysics specialization is primarily for students planning graduate work in astronomy or astrophysics. It also is a suitable focus for students who do not plan to pursue a graduate degree but anticipate a career in science journalism, teaching, science administration, or public relations. The course work includes that of the standard Physics major plus three courses in astrophysics

(Physics 137, 144, 145) and two courses in related branches of physics (selected from Physics 132, 134, 135, and 136). Some familiarity with computer programming and differential equations also is essential.

Graduate Program

The Department offers the M.S. and the Ph.D. degrees in Physics, the first in recognition of demonstrated knowledge of the basic facts and theories of physics, the second primarily in recognition of demonstrated capacity for independent research. Active programs of research are underway in high energy physics, condensed matter physics, low temperature physics, plasma physics, mathematical physics, gravitational physics, and astrophysics.

In general, graduate study in physics is expected to be a full-time activity. Other proposed arrangements should be approved by the Graduate Committee.

Complementing the formal courses, the Department offers regular colloquia and informal seminars. The graduate student is a member of an intellectual community and is 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, high energy, plasma physics, and astrophysics.

About 97 graduate students of physics were enrolled in 1990-91.

Sources of support available to graduate students include teaching assistantships, research assistantships, and fellowships. Students planning to pursue graduate work in physics should obtain a copy of the Department's graduate brochure.

Master of Science in Physics

The requirements for the M.S. degree are: (1) at least three quarters of residence; and (2) mastery of graduate course material, which may be demonstrated by passing, with a grade of B or better, a *minimum* of nine quarter courses numbered between 200 and 259, including 211, 213A-B, 214A, and 215A-B, and a written comprehensive examination. Under special circumstances, a research project and thesis may be accepted in lieu of a written comprehensive examination. There is no foreign language requirement for the M.S. degree. In addition to the stated course requirements, all students who have not passed the Ph.D. qualifying examination must register for Physics 264 (Seminar in Conceptual Physics).

A typical program in preparation for the written examination for the M.S. degree would consist of 12 courses: 211 (Classical Mechanics); 212A-B (Mathematical Physics); 213A-B (Electromagnetic Theory); 214A-B (Statistical Physics); 215A-B (Quantum Mechanics); plus three electives chosen from Physics 212C, 213C, 214C, 215C, or undergraduate upper-division courses in related areas.

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 a two-part 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 for the Ph.D. degree.

Course Requirements. The student is required to exhibit mastery of the basic sequences, Mathematical Physics, Classical Mechanics, Electromagnetic Theory, Quantum Mechanics, Relativistic Quantum Mechanics, and Statistical Mechanics. A *minimum* of 15 quarter courses numbered between 200 and 259, *including* 211,

212A-B, 213A-B, 214A-B, and 215A-B-C, must be passed with a grade of B or better. Students are strongly encouraged to take Physics 211, 212A-B-C, 213A-B, and 215A-B-C in their first year of study. In addition, all students who have not passed the Ph.D. qualifying examination are required to register for Physics 264. It is expected that students, having selected a research specialty, will ordinarily take the core course in that subject (236A-B-C, 237A-B-C, 238A-B-C, or 239A-B-C-D) early in their graduate career.

Qualifying Examination. For advancement to Ph.D. candidacy, a student must pass a qualifying examination consisting of a written part and two oral parts. The written part, covering a broad range of fundamentals of physics at the advanced undergraduate and graduate levels, is normally taken in the fall following the student's first year. The first oral examination is administered shortly after the written examination. All members of the first oral committee will be from the Department of Physics. A second attempt at this set of examinations will be permitted if the first is not successful. A third attempt will be permitted only in extraordinary circumstances.

The second part of the oral examination will be taken approximately one year after successful completion of the written examination and the first oral. The candidacy committee that administers the second oral examination will contain one or two faculty members from outside the Physics Department. The second oral 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 graduate students are expected to participate in the teaching program for at least three quarters during their graduate careers.

Dissertation. A dissertation summarizing the results of original research performed by the student under the supervision of a doctoral committee appointed by 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 Department.

Defense of Dissertation. Upon completion of the dissertation, the student will take an oral examination, open to the public, before the doctoral committee.

Suggested Course Sequence. Typical programs for the first two years designed to prepare the student for Ph.D. qualification and provide the foundation necessary for understanding and participating in modern research might include:

First Year: 211 (Classical Mechanics); 212A-B-C (Mathematical Physics); 213A-B (Electromagnetic Theory); 215A-B-C (Quantum Mechanics).

In the second and third years of graduate study, the student will take courses providing a background for dissertation research. Areas of concentration may include courses as shown below:

For the student with an interest in astrophysics:

213C (Modern Optics); 214A-B (Statistical Physics); 216 (Particle Physics); 217 (Nuclear Physics); 222 (Hydrodynamics); 236A-B-C (Astrophysics); 255 (General Relativity).

For the student with an interest in condensed matter physics:

221 (Elasticity); 222 (Hydrodynamics); 214A-B (Statistical Physics); 214C-D (Many Body Theory); 235A (Advanced Quantum Mechanics); 232A-B (Group Theory); 238A-B-C (Solid State Theory).

For the student with an interest in elementary particle physics:
237A-B-C (Elementary Particle Theory); 235A-B (Advanced Quantum Mechanics); 232B (Group Theory); 214A-B (Statistical Physics).

For the student with an interest in plasma physics:
212C (Mathematical Physics); 214A-B (Statistical Physics); 239A-B-C-D (Plasma Physics); 249A-B-C (Plasma Physics).

Courses in Physics

Lower-Division

1 Preparation for Physics (4) F. Lecture, three hours; discussion, one hour. Mathematical review, introduction to calculus and vectors, and the uses of these techniques in physics. Physical units. Corequisite: Mathematics 1 or 2A.

3A-B-C Basic Physics (4-4-4) F, W, S, Summer. Lecture, three hours; discussion, one hour. 3A: survey of physical theory; Newtonian mechanics. 3B: electricity and magnetism; radiation and waves; optics; heat phenomena. 3C: twentieth-century physics; relativity; quantum ideas; atomic and nuclear physics. Prerequisite or corequisite: Mathematics 2A-B-C. (II)

3LA-LB Basic Physics Laboratory (1.5-1.5) F, W, Summer. Laboratory accompanying Physics 3A-B, three hours. (II)

5A-B-C-D-E Fundamental Physics (4-4-4-4-4) W, S, F, W, S; 5A-B (Summer). Lecture, three hours; discussion, one hour. 5A: Newtonian mechanics, kinematics, and dynamics of motion. Facility in calculus is assumed. Prerequisite: Physics 1 or score of at least 4 on the Advanced Placement Test C, Part I in Physics or satisfactory pretest score. Corequisite: Mathematics 2B. 5B: equilibrium mechanics; fluids and elasticity; oscillations and waves. Corequisite: Mathematics 2C. 5C: electrostatics, magnetostatics, currents and fields, circuit elements, Maxwell's equations. Prerequisites: Mathematics 2A-B-C. 5D: electromagnetic radiation; interference, diffraction; quantum mechanics; atomic physics. 5E: thermodynamics and kinetic theory, relativity. Concurrent enrollment in Physics 5L is required each quarter (laboratory requirement may be waived by consent of instructor). Physics 5A-B-C (II)

5LB-LC-LD-LE Fundamental Physics Laboratory (1.5-1.5-1.5-1.5) S, F, W, S; 5LB-LC (Summer). Laboratory accompanying Physics 5B-C-D-E, three hours. Physics 5LB-LC (II)

COURSES FOR NON-MAJORS

Course numbers between 16 and 24 are assigned to courses especially designed for students majoring in programs other than the physical sciences.

16 Physics and Global Issues (4) S. Lecture, three hours. Introduction to the physics underlying the issues of war and peace, energy, and the environment. Topics include: nuclear and non-nuclear weapons, delivery systems, and arms control; energy sources (fossil fuels, nuclear reactors) and related environmental problems (reactor safety, waste management, global warming, ozone depletion). Primarily for non-Physics majors. Prerequisites: Physics 17A-B; Physics 3A-B or consent of instructor. (II)

17A-B Conceptual Physics (4-4) F, W. Lecture, three hours. Introduces the nonscience student to important ideas of physics with an emphasis on the human and historical developments. Topics include Newtonian mechanics and the revolutions of relativity and quantum mechanics. Experimental necessity for these and their philosophical implications. No mathematics background required, but high school algebra recommended. Not open to students majoring in the Schools of Physical Sciences or Engineering, or to students with credit for any portion of Physics 3A-B-C, Physics 5A-B-C-D-E, or equivalent. (II)

20 Physics of the Cosmos. Introduction to the physics of the universe. The formation, structure, and evolution of planets, stars, galaxies, and the universe as a whole. Any three of the four courses satisfy the natural science breadth requirement. Open to non-Physics majors only.

20A Introduction to Astronomy (4) F, W. 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 Geophysics: The Making of the Earth (4) S. How the earth came to be and how it is studied. Causes and effects of earthquakes, mountains, valleys, rivers, glaciers, deserts, and oceans. Continental drift and plate tectonics. Causes and uses of the earth's magnetic field. Geophysics and the environment. (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)

21-24 Special Topics in Physics (4). Lecture, three hours. Topics of special interest varying from year to year. Past topics have included super-cold, Newton, physics via demonstration, the physics of music, and Rainbows and Things. May be repeated for credit if topic varies.

H90A-B-C The Idiom and Practice of Science (4-4-4) F, W, S. 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 calculus, radiation, Newton's Laws, chemical and biochemical reaction rates, epidemics, atmospheric chemistry and physics, and earthquake physics. Prerequisite: restricted to members of the Campuswide Honors Program or consent of instructor. Same as Chemistry H90A-B-C and Mathematics H90A-B-C. (II)

Upper-Division

110A-B-C Methods of Mathematical Physics (4-4-4) F, W, S. Lecture, three hours; discussion, one hour. Provides mathematical tools for upper-division physics courses. Topics include ordinary and partial differential equations, special functions, boundary value problems. Fourier and Laplace transforms, linear algebra and tensor analysis, and complex functions. Application of mathematical methods to physical problems are stressed. Prerequisites: Mathematics 2D-E, 3A or equivalent. Same as Mathematics 143A-B-C.

111A-B Classical Mechanics (4-4) F, W. Lecture, three hours; discussion, one hour. Mechanics of particles through Lagrangian and Hamiltonian methods; rigid bodies; relativity; coupled systems. Prerequisite: Physics 5D or consent of instructor.

112A-B Electromagnetic Theory (4-4) 112A (S), 112B (F). Lecture, three hours; discussion, one hour. Electrostatics; magnetostatics; properties of matter; Maxwell's equations; relativity; radiation; optics. Prerequisites: Physics 5C and Physics 110A-B.

113A-B-C Quantum Physics (4-4-4) F, W, S. 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 5A-B-C-D-E or equivalent; Physics 110A-B-C or equivalent.

115 Statistical Physics (4) W. Lecture, three hours. Microscopic theory of temperature, heat, and entropy; kinetic theory; multicomponent systems; quantum statistics. Prerequisites: Physics 5E, Mathematics 2E.

116 Thermodynamics (4) S. Lecture, three hours. Macroscopic theory of temperature, heat, and entropy; mathematical relationships of thermodynamics; heat engines; phase transitions. Prerequisites: Physics 5E, Mathematics 2E.

131A, B, C Special Topics in Computational Physics (4-4-4) F, W, S. Lecture, three hours; laboratory, 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. Prior or concurrent enrollment in Physics 110A-B-C, Physics 113A recommended. May be repeated for credit as topic varies. Concurrent with Physics 231A, B, C.

132 Introduction to Nuclear Physics (4). Lecture, three hours. Nucleons and nuclear structure, radioactivity, neutron-proton scattering, the deuteron, nuclear reactions. Prerequisite: Physics 113A.

133 Introduction to Condensed Matter Physics (4) S. Lecture, three hours. Phenomena of solids and their interpretation in terms of quantum theory. Prerequisites: Physics 5D-E.

134 Introduction to Modern Optics (4) W. Lecture, three hours. Interaction of radiation with matter; lasers; nonlinear optics; optical properties of solids; absorption and scattering of light; modern spectroscopic techniques. Prerequisites: Physics 112B and 113A.

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. Prerequisites: Physics 5D-E.

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 113A.

137 Introduction to Cosmology (4) S. Lecture, three hours. Structure and evolution of galaxies, general relativistic models of the universe, observational tests of cosmological models, early phases of the universe, unconventional cosmologies. Prerequisites: Physics 5A-B-C-D-E or consent of instructor.

139 Technical Writing and Communication Skills (4) F, W, S. Lecture, four 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. Prerequisite: upper-division standing; satisfaction of the lower-division writing requirement. Open to Physics majors only. Same as Chemistry 139 and Mathematics 139.

144 Stellar Astrophysics (4) W of odd years. Lecture, three hours. Stars: their structure and evolution; physical state of the interior; the Hertzsprung-Russell diagram, stellar classification, and physical principles responsible for the classification; star formation; nuclear burning; giant and dwarf stars; neutron stars and black holes. Prerequisite: Physics 5E or consent of instructor.

145 High Energy Astrophysics (4) S of even years. Lecture, three hours. Production of radiation by high energy particles. Evolution of galactic nuclei, radio galaxies, quasars, and pulsars. Cosmic rays and the cosmic background radiation. Prerequisite: Physics 5E or consent of instructor.

150 Electronics for Scientists I (4) F, W. 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 5E or consent of instructor.

151, 152, 153 Advanced Laboratory I, II, III (4-4-4) F, 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. Corequisite: Physics 113A. Prerequisites: Physics 112A and 150. Physics 150 may be waived by consent of instructor.

164 Seminar in Conceptual Physics (1-1) S. Discussion of physics as an interrelated discipline; practice in oral presentation of ideas and problems. Prerequisite: Physics 5A-B-C-D-E or consent of instructor. Pass/Not Pass Only.

187 Medical Physics (4) S. Lecture, three hours. Physics of medical imaging techniques including x-radiology, nuclear medicine, ultrasound, and nuclear magnetic resonance. Topics include interactions of electromagnetic, nuclear, and sonic radiation with matter, nuclear resonance, computer tomography. Instrumentation and methodology for imaging are discussed. Prerequisite: Physics 5E or consent of instructor.

195 Undergraduate Research (4). Open to seniors and occasionally to juniors with consent of the Department. Pass/Not Pass Only.

H195 Honors Research in Physics (4-4) F, W. A two-quarter research course for participants in the Honors Program in Physics only. On approval of a proposal, research is carried out under the guidance of a Physics faculty member.

H196 Honors Seminar in Physics (2) S. Students' research results obtained in Physics H195 are discussed in oral presentations, and a written thesis is submitted. Open to participants in the Honors Program in Physics only.

199 Readings on Special Topics (4). With consent of the Department. Pass/Not Pass Only.

Graduate

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-C Mathematical Physics (4-4-4) F, W, S. Lecture, three hours. Ordinary differential and partial differential equations; complex variables and special functions; matrices, eigenvalues and eigenvectors; numerical methods; perturbation theory; integral equations; calculus of variations; elements of group theory.

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) S. 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. Maxwell-Boltzmann, Bose-Einstein, and Fermi-Dirac statistics; ensemble theory, ideal and imperfect gases; thermodynamic properties of solids; cooperative phenomena; phase transitions of first and second order; fluctuations.

214C-D Many Body Theory (4-4) S, F. Application of field theory methods, perturbative and non-perturbative to many particle systems.

214C: second quantization, Feynman diagrams, linear response theory and functional integral methods applied to the ground state; **214D:** and at finite temperature.

215A-B-C Quantum Mechanics (4-4-4) F, W, S. Lecture, three hours. Foundations of quantum theory; Dirac notation, basic operators and their eigenstates; perturbation theory; variational method; spin; Clebsch-Gordon coefficients; structure of atomic systems; scattering theory; formal collision theory; semi-classical radiation theory; quantization of the electromagnetic field; relativistic quantum mechanics; second quantization of many body systems.

221 Elasticity (4) S. Lecture, three hours. Analysis of strain and stress; elasticity of crystals; equilibrium of isotropic elastic solids and of half-spaces; bending of rods and plates; two-dimensional elastic systems; propagation of waves in elastic solid media; surface waves; piezo-electric solids; dislocations; thermoelasticity.

222 Hydrodynamics (4) W. Lecture, three hours. Hydrodynamics of a perfect fluid; two-dimensional problems, motion of an incompressible viscous fluid; Navier-Stokes equations; viscous fluids in rotation; motion in three dimensions; introduction to motion of a compressible fluid.

231A, B, C Special Topics in Computational Physics (4-4-4) F, W, S. Lecture, three hours; laboratory, 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. Prior or concurrent enrollment in Physics 212A-B-C; Physics 215A-B-C recommended. May be repeated for credit as topic varies. Concurrent with Physics 131A, B, C.

232A-B Applications of Group Theory (4-4) F, W. Lecture, three hours. The role of symmetry in physical problems. **232A:** finite groups; **232B:** continuous groups. 232B can be taken without 232A. Abstract group theory and theory of group representations. Perturbation theory, selection rules, crystal tensors, molecular vibrations, Jahn-Teller theorem, directed valence, time reversal symmetry, double groups, crystal field splittings of atomic levels. Continuous groups and particle physics. Full rotation group, Clebsch-Gordon coefficients, the Wigner-Eckart theorem, Racah coefficients, the Lorentz group, unitary groups.

235A-B Advanced Quantum Mechanics (4-4) F, W, S. Lecture, three hours. Fall: Lagrangian formalism, second quantization, interacting fields, perturbation theory. Winter: Feynman graph techniques, renormalization, symmetries, PCT theorem, connection between spin and statistics.

236A-B-C Astrophysics (4-4-4) F, W, S. Lecture, three hours. Theoretical background and survey of astrophysical research. 236A: Fundamentals of astrophysics; overview, radiation mechanisms, plasma and magnetic effects. 236B: Stellar and related astrophysics; stellar structure and evolution, white dwarfs, neutron stars, supernovas, supernova remnants. 236C: Nonstellar astrophysics; quasars; blackholes, cosmic rays, cosmology.

237A-B-C Elementary Particle Theory (4-4-4) F, W, S. Lecture, three hours. Background and current topics in elementary particle theory including weak interactions, unified gauge theory of weak and electromagnetic interactions, quark-parton model of small distance structure, quark model of hadron spectroscopy, charmed particles, new quarks and leptons, and an introduction to quantum chromodynamics. May be repeated for credit.

238A-B-C Solid State Theory (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.

239A-B-C-D Plasma Physics (4-4-4-4) F, W, S, F. Lecture, three hours. The properties of plasmas, with major emphasis on fully ionized gases. Introduction to modern theoretical treatments. Applications to problems such as controlled thermonuclear fusion, propulsion, energy conversion, astrophysics, and the space sciences. 239A: Introduction, magnetohydrodynamics, equilibrium, and stability. 239B: Theory of cold plasma waves, thermal effects. 239C: The Vlasov equation, microinstabilities and transport, plasma turbulence. 239D: Multiple wave interactions, quasi-linear theory, nonlinear plasma theory. Series begins in fall of even-numbered years.

246A-B-C Special Topics in Astrophysics (4-4-4) F, W, S. Lecture, three hours. Each quarter 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 as topic varies.

247A-B-C Special Topics in High-Energy Physics (4) F, W, S. Lecture, three hours. Current topics in high-energy physics. Includes topics from accelerator and non-accelerator-based research fields. May be repeated for credit as topic varies.

248A-B-C Special Topics in Condensed Matter Physics (4-4-4) F, W, S. Lecture, three hours. Each quarter outlines and emphasizes a subarea of condensed matter physics that is undergoing rapid development. May be repeated for credit.

249A-B-C Special Topics in Plasma Physics (4-4-4) F, W, S. Lecture, three hours. For advanced students of plasma physics. Three quarters are offered, one quarter each in turbulence and diagnosis of laboratory plasmas, pulse power beams, and beam-plasma interactions. Prerequisites: Physics 239A-B-C or the equivalent. 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 (4-4-4) F, W, S. Seminar designed to acquaint students with recent advances in solid state physics. Lecturers from the Physics Department (both faculty and graduate students), other UCI departments, and other institutions. May be repeated for credit. Prerequisite: consent of instructor.

261A-B-C Seminar in Plasma Physics (4-4-4) 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. Prerequisite: Physics 239A-B-C-D or equivalent.



Assistant Professor of Physics Rognvald Garden serves as a mentor to senior Physics majors who plan to pursue doctoral study.

263A-B-C Seminar in High Energy Physics (4-4-4) F, W, S. Discussion of advanced topics and reports of current research results in theoretical and experimental high energy physics and cosmic rays. May be repeated for credit. Prerequisite: consent of instructor.

264 Seminar in Conceptual Physics (1) S. Discussion of physics as an interrelated discipline, practice in oral presentation of ideas and problems. Required of all graduate students who have not passed the Ph.D. qualifying examination.

265A-B-C Seminar in Astrophysics (4-4-4) F, W, S. Acquaints students with current research in astrophysics. Lectures from the Department of Physics and from other institutions. May be repeated for credit.

267A-B-C Current Problems in High Energy Physics (4-4-4) F, W, S. Lecture, three hours. Presentation and discussion of current research and theory in high energy physics. Lectures given by staff and students. May be repeated for credit.

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 low temperature physics, plasma physics, spectroscopy, solid state physics, and elementary particle 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 solid state physics, low temperature physics, plasma physics, spectroscopy, and elementary particle physics.

298 Physics Colloquium (0). 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.

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.

399 University Teaching (1 to 4) F, W, S. Required of and limited to Teaching Assistants.

School of Social Sciences

William R. Schonfeld, *Dean*

Social Science Tower

Undergraduate Counseling: (714) 856-6803

Graduate Counseling: (714) 856-5924

Faculty

William H. Batchelder, Ph.D. Stanford University, *Professor of Cognitive Sciences*

Duran Bell, Ph.D. University of California, Berkeley, *Associate Professor of Economics and Anthropology*

Isabel Birnbaum, Ph.D. University of California, Berkeley, *Professor of Psychology*

James S. Boster, Ph.D. University of California, Berkeley, *Associate Professor of Anthropology*

John P. Boyd, Ph.D. University of Michigan, *Associate Professor of Mathematical Anthropology*

Myron L. Braunstein, Ph.D. University of Michigan, *Acting Associate Dean of Graduate Studies, School of Social Sciences, and Professor of Psychology*

David Brownstone, Ph.D. University of California, Berkeley, *Assistant Professor of Economics*

Dickson D. Bruce, Jr., Ph.D. University of Pennsylvania, *Professor of Comparative Culture and Social Sciences*

Michael L. Burton, Ph.D. Stanford University, *Chair of the Department of Anthropology and Professor of Anthropology*

Michael Butler, J.F., Society of Fellows, Harvard University, *Dean of Undergraduate Studies, Associate Professor of Social Sciences, and Director of the Farm School*

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Peter Clecak, Ph.D. Stanford University, *Director of the Program in Comparative Culture and Professor of Comparative Culture and Social Sciences*

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Thomas N. Cornsweet, Ph.D. Brown University, *Professor of Psychology and of Electrical and Computer Engineering*

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James N. Danziger, Ph.D. Stanford University, *Chair of the Department of Politics and Society and Professor of Political Science*

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David Easton, Ph.D. Harvard University, *UCI Distinguished Professor Emeritus of Political Science*

Harry Eckstein, Ph.D. Harvard University, *UCI Distinguished Professor of Political Science*

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Mary Ritchie Key, Ph.D. University of Texas, *Professor of Linguistic*

Jerome Kirk, Ph.D. The Johns Hopkins University, *Associate Professor of Anthropology and Sociology*

Daniel Klein, Ph.D. New York University, *Assistant Professor of Economics*

David LaBerge, Ph.D. Stanford University, *Professor of Psychology*

Barbara Landau, Ph.D. University of Pennsylvania, *Associate Professor of Psychology*

Charles Lave, Ph.D. Stanford University, *Chair of the Department of Economics and Professor of Economics*

H. Hiro Lee, Ph.D. University of California, Berkeley, *Assistant Professor of Economics*

Sung-Chull Lee, Ph.D. University of Kansas, *Assistant Professor of Political Science*

Karen Leonard, Ph.D. University of Wisconsin, *Professor of Anthropology*

Alain A. Lewis, Ph.D. Harvard University, *Associate Professor of Social Sciences and Philosophy*

David M. Lilien, Ph.D. Massachusetts Institute of Technology, *Professor of Economics*

John M. Liu, Ph.D. University of California, Los Angeles, *Assistant Professor of Comparative Culture and Social Sciences*

R. Duncan Luce, Ph.D. Massachusetts Institute of Technology, *Director, Irvine Research Unit in Mathematical Behavioral Science, UCI Distinguished Professor of Psychology, and Professor of Management*

Craig MacAndrew, Ph.D. University of Chicago, *Professor of Psychology*

Virginia Mann, Ph.D. Massachusetts Institute of Technology, *Professor of Psychology*

Julius Margolis, Ph.D. Harvard University, *Professor Emeritus of Economics*

Robert May, Ph.D. Massachusetts Institute of Technology, *Chair of the Program in Linguistics and Professor of Linguistics*

Duane Metzger, Ph.D. University of Chicago, *Professor of Anthropology and Social Sciences*



Students in the Honors Program in Political Science take seminar courses that include intensive reading and discussion of the most influential works and fundamental issues in modern political science. Assistant Professor of Political Science Mark P. Petracca's Honors Seminar is shown here.

Kristen R. Monroe, Ph.D. University of Chicago, *Associate Professor of Political Science*
 Carlton Moss, *Lecturer in Comparative Culture and Social Sciences*
 Giovanna Mossetti, Ph.D. University of California, Los Angeles, *Assistant Professor of Economics*
 Louis Narens, Ph.D. University of California, Los Angeles, *Professor of Cognitive Sciences*
 Robert Newcomb, Ph.D. University of California, Santa Barbara, *Senior Lecturer in Social Sciences*
 Jack W. Peltason, Ph.D. Princeton University, *Chancellor and Professor of Political Science*
 Mark P. Petracca, Ph.D. University of Chicago, *Assistant Professor of Political Science*
 Henry N. Pontell, Ph.D. State University of New York, Stony Brook, *Associate Dean of Graduate Studies and Associate Professor of Social Ecology and Social Sciences*
 M. Ross Quillian, Ph.D. Carnegie-Mellon University, *Associate Professor of Social Sciences*
 A. Kimball Romney, Ph.D. Harvard University, *Professor of Social Sciences and Anthropology*
 Shawn Rosenberg, M. Litt. University of Oxford, *Associate Professor of Political Science and Social Psychology*
 Arthur Rubel, Ph.D. University of North Carolina, *Professor of Medicine and Social Sciences*
 William R. Schonfeld, Ph.D. Princeton University, *Dean of the School of Social Sciences and Professor of Political Science*
 Caesar D. Sereseres, Ph.D. University of California, Riverside, *Associate Dean for Undergraduate Studies, School of Social Sciences, and Associate Professor of Political Science*
 Stergios Skaperdas, Ph.D. The John Hopkins University, *Assistant Professor of Economics*
 Kenneth A. Small, Ph.D. University of California, Berkeley, *Associate Dean of Graduate Studies, School of Social Sciences, and Professor of Economics*
 David A. Smith, Ph.D. University of North Carolina, Chapel Hill, *Assistant Professor of Sociology*
 Etel Solingen, Ph.D. University of California, Los Angeles, *Assistant Professor of Political Science*
 Dorothy Solinger, Ph.D. Stanford University, *Associate Professor of Political Science*
 Judith Stepan-Norris, Ph.D. University of California, Los Angeles, *Assistant Professor of Sociology*
 Rein Taagepera, Ph.D. University of Delaware, *Professor of Social Sciences and Political Science*
 Dickran Tashjian, Ph.D. Brown University, *Professor of Comparative Culture and Social Sciences*
 Gary Thom, Ph.D. Yale University, *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, *Chair of the Department of Sociology and Professor of Sociology*
 Carole Uhlaner, Ph.D. Harvard University, *Associate Professor of Political Science*
 Robert G. Valletta, Ph.D. Harvard University, *Assistant Professor of Economics*
 W.C. Watt, Ph.D. University of Pennsylvania, *Professor of Cognitive Sciences*
 Martin P. Wattenberg, Ph.D. University of Michigan, *Associate Professor of Political Science*
 Christian Werner, Ph.D. The Free University of Berlin, *Professor of Social Sciences*
 Douglas R. White, Ph.D. University of Minnesota, *Professor of Anthropology*
 Joseph L. White, Ph.D. Michigan State University, *Professor of Comparative Culture and Psychology*
 John I. Yellott, Jr., Ph.D. Stanford University, *Professor of Psychology*

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 pro-

grams go well beyond the traditional disciplines and can be characterized by the following three-way emphasis:

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, comparative culture, and psycholinguistics. Therefore many courses and course modules are built around social science phenomena rather than representing social science disciplines.

Third, the School shares the academic philosophy that considers the design of hypotheses and of systems of interrelated ideas about the possible structure of the world to be 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; 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.

Careers in Social Sciences

Graduates of the School of Social Sciences find many and diverse career opportunities. Social Sciences graduates have been in demand for jobs in government, primary and secondary teaching, and human services, as well as for careers in business. Social Sciences graduates have gone on to further studies, some at the doctoral level in preparation for careers in research and university teaching, others in the professions of law and medicine, in education, and in business administration.

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 positions in 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 Career Planning and Placement Center provides services to UCI 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 Planning and Placement Center section.

Special Facilities

The School of Social Sciences maintains several special facilities for research and education. The Social Sciences Research Laboratory occupies the entire fourth floor of the Social Sciences Laboratory Building. The facility contains 40 experiment and control rooms situated around a central core where two Micro Vax II computer systems are available for experimental research. The laboratory is used for both faculty and student research.

The Farm School, a small, open, and ungraded elementary school located in a rural setting adjacent to the campus, serves as a research facility for faculty and students having interests in children and how they learn. Each quarter undergraduates receive course credit for assisting staff teachers, for developing educational materials, and for observing and analyzing child behavior at the school.

The Laboratory of Anthropology is used for research in medical anthropology, quantitative studies, discourse analysis, and artificial intelligence. Facilities include personal computers; computer terminals and software for statistical studies, parallel distributed processing, and content analysis.

Visiting Distinguished Professorships

The School of Social Sciences 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 at 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.

Degrees

Anthropology.....	B.A.
Comparative Culture	B.A., M.A., Ph.D.
Economics	B.A., M.A., Ph.D.
Geography*	B.A.
Linguistics	B.A.
Political Science.....	B.A., Ph.D.
Psychology	B.A., Ph.D.
Social Science	B.A., M.A., Ph.D.
Sociology	B.A.

Within the Ph.D. in Social Science are three optional concentrations:

Social Networks, supervised by the faculty in Anthropology and Sociology.

Social Relations, supervised by the faculty in Anthropology and Sociology.

Linguistics, supervised by faculty in Cognitive Sciences.

*The major of Geography is not available at this time; however, courses in Geography are offered on a regular basis.

Honors

Honors at graduation, i.e., *cum laude*, *magna cum laude*, or *summa cum laude*, are awarded on the basis of academic performance. Of the graduating seniors, approximately 1 percent will be awarded *summa cum laude*, 3 percent *magna cum laude*, and 8 percent *cum laude*. To be considered for honors, a student must have a minimum of 72 units in residence at a University of California campus and must submit an application for the B.A. degree by the end of winter quarter of the senior year.

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: Junior transfers electing to major in one of the School's degree programs and with good records at other accredited colleges and universities normally will be presumed to have satisfied School requirement B and the University requirements, with the exception of the upper-division writing requirement of the breadth requirement (Category I). Students anticipating transfer to UCI in their junior year, however, should plan their programs so as to anticipate the special mathematics requirements of the program (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.

Special Programs

3-2 Program with the Graduate School of Management

Outstanding students who are interested in a career in management may wish to apply for entry into the Graduate School of Management's 3-2 Program. Students normally apply for this program early in their junior year. See the Graduate School of Management section for additional information.

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 more than 85 host universities and colleges in 33 countries throughout the world. Additional information is available in the Education Abroad Program section.

Minor in Global Peace and Conflict Studies

734 Social Science Tower; (714) 856-6410
Keith Nelson, **Director**

Faculty

Dennis Aigner, Graduate School of Management
Peter Bowler, School of Biological Sciences
Russell Dalton, School of Social Sciences
Joseph DiMento, Program in Social Ecology
John Graham, Graduate School of Management
Lawrence Howard, School of Social Sciences
Karl Hufbauer, School of Humanities
Jon Jacobson, School of Humanities
Gregory Kavka, School of Humanities
Jon Lawrence, School of Physical Sciences
Sung-Chull Lee, School of Social Sciences
Franklin Long, School of Social Sciences
and Program in Social Ecology
Herbert Lehnert, School of Humanities
Guy de Mallac, School of Humanities
Julius Margolis, School of Social Sciences
Richard McCleary, Program in Social Ecology
Calvin McLaughlin, School of Biological Sciences
Seymour Menton, School of Humanities
Keith Nelson, School of Humanities
Riley Newman, School of Physical Sciences
Margot Norris, School of Humanities
Frederick Reines, School of Physical Sciences
Shawn Rosenberg, School of Social Sciences
Sherwood Rowland, School of Physical Sciences
Roland Schinzinger, School of Engineering
Caesar Sereseres, School of Social Sciences
Robert Scheer, School of Social Sciences
and Program in Social Ecology
Etel Solingen, School of Social Sciences
Rein Taagepera, School of Social Sciences
John Whiteley, Program in Social Ecology

The minor in Global Peace and Conflict Studies is an interdisciplinary curriculum which addresses international violence; the threat of global war; and paths to world-wide cooperation in meeting military, economic, and environmental threats to global security. The minor is available through the School of Social Sciences, the Program in Social Ecology, and the School of Humanities. The minor and its courses, however, are open to all UCI students.

Participants in the minor must complete the equivalent of ten courses, beginning in the sophomore year with an introductory series and culminating with the senior Peace and Conflict Seminar. The student selects the remainder of the courses comprising the minor from an approved list of upper-division courses and must organize these choices in consultation with a panel of the participating faculty into a coherent interdisciplinary program complementary to the student's major.

Requirements for the Minor:

Four lower-division courses: History 11 (Introduction to Peace and Conflict), Political Science 41A (Introduction to International Relations), Political Science 42A (Nuclear Arms and Global Conflicts), Physics 16 (Physics of Global Issues).

Four relevant upper-division courses: Among those usually offered are: Economics 148A-B (Political Economy of National Defense); History 133A-B-C (European International History), History 146B (American Foreign Relations Since World War II), History 195 (Arms Control Simulation); Philosophy 182 (Issues in Social Philosophy); Political Science 142A (U.S. Foreign Policy: The Cold War Years), Political Science 142B (U.S. Foreign Policy: National Security Decision Making), Political Science 143C (Arms Control and International Security), Political Science 143D (Global Security and Cooperation), Political

Science 152D-E (Soviet Society and Politics); Social Ecology S178, S179, S180 (Social Ecology of Peace); and Sociology 178 (Sociology of Peace and War).

(With approval of the Global Peace and Conflict Studies faculty, a relevant lower-division course may be substituted for one of the upper-division courses.)

The Senior Seminar on Peace and Conflict: Social Sciences 184A-B-C (same as Humanities 181A-B-C and Social Ecology E185A-B-C). Students attend and subsequently discuss weekly forum talks given by scholars from a variety of institutions on topics related to peace, conflict, and global cooperation. In the first two quarters of this sequence students prepare for a research paper to be written in the third quarter, which confers upper-division writing credit. The three quarters of the Seminar sequence carry respectively, two, two, and four units of credit.

Further information concerning the minor is available in the Global Peace and Conflict Studies Office.

Concentration in Religious Studies

The undergraduate Concentration in Religious Studies encourages the student to examine religion and religious phenomena in the context of several disciplines. Information is available in the School of Humanities section.

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 Undergraduate Advising Office (120 Social Science Tower) to design an appropriate program of study.

Students who elect one of the Social Sciences 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 breadth 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 breadth 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.

Double Majors

In order to double major within the School of Social Sciences, the following conditions must be met:

- (1) Normally, neither major program may be the general social science program.
- (2) Major and School requirements must be met for *both* majors with no overlap of courses except for those used to satisfy the mathematics, computer science, and introductory social science requirements. The mathematics and computer science courses need only be taken once. Only two introductory social science classes are needed, provided this also meets the requirements of both major programs. The same two-digit and upper-division courses may *not* be used to meet the requirements of more than

one major program. For example, a student who wishes to major in psychology and anthropology may take one of the mathematics sequences, Information and Computer Science 1A or 21, and may use Introduction to Psychology and Introduction to Anthropology to meet the major and School requirements for both programs. However, two different sets of two-digit and upper-division courses must be taken to complete the major and School requirements of the two programs.

Teaching Credentials

Students planning to seek State of California teaching credentials in social science should discuss their undergraduate curriculum plans with the School's academic counselors.

Mathematics and Social Science

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.

Courses in Social Sciences

Courses in the School do not invariably resemble conventional university courses either in content or in format. Students at any level are encouraged to suggest areas of individual study and may (with faculty approval) pursue any intellectually challenging area within the social sciences. Such courses may include special seminars, study projects, individual papers, or any other useful educational activity. The faculty encourages students to present evidence that they have done interesting and original work and to receive official credit for that work by enrolling in an individual study course. Such courses are numbered 198 and 199 (undergraduate) and 299 (graduate).

Students from other schools are encouraged to take courses and talk with faculty within the School. In addition to the introductory courses, many of the upper-division courses are open to students without previous work in social science. Most upper-division courses are arranged in modules in order to provide continuity over individual courses, to facilitate long-range planning by students, and to encourage the pursuit of interdisciplinary programs of study. Students are encouraged to take advantage of the module concept to acquire experience in several integrated sets of courses. *It is not necessary, however, for students to take all courses listed in a module; module courses may be taken individually, as long as course prerequisites have been met.*

The specific courses offered in module form may vary from year to year, but the structure of the curriculum will remain stable. Ordinarily, a student can expect to find at least one module offered in each broad area each year. By observing the content area of courses and by making effective use of module sequences, a student can assemble an individual program of study in a particular discipline or in an interdisciplinary area.

NOTE: Students who entered UCI before fall quarter, 1991, should refer to previous editions for information on the course numbering and lettering system prior to fall 1991.

Undergraduate Program

Requirements for the Bachelor's Degree

University Requirements: See pages 50–53.

School Requirements

A. Familiarity with basic mathematical, computational, and statistical tools underlying modern social science. This requirement is met by passing a three-course sequence in mathematics (Anthropology 10A-B-C, Economics 10A-B-C, Mathematics 2A-B-C, Psychology 10A-B-C, Social Sciences 10A-B-C, Social Sciences 100A-B-C, or Sociology 10A-B-C) and one course in computer science (Information and Computer Science 1A or 21). These courses normally 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 introductory courses in the School of Social Sciences bearing a one-digit course number. These courses normally should be taken during the student's first year.

C. An understanding of important advanced areas in social science. This requirement is met by passing satisfactorily nine upper-division courses in the School of Social Sciences, where at least three of these courses comprise a module. 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 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 below. However, Information and Computer Science 1A, 21, and Social Sciences 100A 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.

Department of Anthropology

Michael L. Burton, **Department Chair**

Anthropology is the comparative study of past and contemporary human societies and cultures. The Department of Anthropology emphasizes contemporary theory in social and cultural anthropology, the anthropological tradition of field research, and formal methods for collecting and analyzing anthropological data. The Department has a strong interdisciplinary bent, with research and teaching interests in psychological anthropology, economic anthropology, social history and social change, culture and health, and social structure.

Information on graduate programs and courses begins on page 249.

Requirements for the Bachelor's Degree

University Requirements: See pages 50–53.

School Requirements: See page 223.

Departmental Requirements for the Major

School requirements must be met and must include 10 courses (40 units) as specified below:

- A. Anthropology 2A.
- B. Anthropology 2B, 2C, or 2D.
- C. Three courses (12 units), one from each of three of the following topical areas in anthropology:
 - (1) Kinship and Social Structure (Anthropology 121A, 121D, 121G)
 - (2) Economic and Ecological Anthropology (Anthropology 121J, 125A, 125B, 125P-Q)
 - (3) Psychological and Cognitive Anthropology (Anthropology 132A, 132B)
 - (4) Religion and Ideology (Anthropology 135A, 135H)
- D. Two courses (eight units) on a geographical area, selected from courses in the Area Studies module (Anthropology 160–169).
- E. Three additional anthropology courses (12 units) selected from those numbered Anthropology 40–180 or Comparative Culture 20C.

Students are strongly encouraged to take Anthropology 71A early in their studies and Anthropology 180A after they have had at least three courses beyond Anthropology 2A, 2B, 2C, or 2D.

Anthropology Minor Requirements

Requirements for the minor in Anthropology are met by taking eight anthropology courses (32 units) as specified below:

- A. Anthropology 2A.
- B. Anthropology 2B, 2C, or 2D.
- C. Three courses (12 units), one from each of three of the following topical areas in anthropology:
 - (1) Kinship and Social Structure (Anthropology 121A, 121D, 121G)
 - (2) Economic and Ecological Anthropology (Anthropology 121J, 125A, 125B, 125P-Q)
 - (3) Psychological and Cognitive Anthropology (Anthropology 132A, 132B)
 - (4) Religion and Ideology (Anthropology 135A, 135H)
- D. One course (four units) on a geographical area, selected from courses in the Area Studies module (Anthropology 160–169).

- E. Two additional anthropology courses (eight units), selected from those numbered Anthropology 40–180 or Comparative Culture 20C.

Courses in Anthropology

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, VII-B)

2B Introduction to Biological Anthropology (4). Evolutionary theory and processes, comparative primate behavior, primate fossil record, human variation, and the adequacy of theory, i.e., fit 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 Economics 10A-B-C, Psychology 10A-B-C, Social Ecology 13, Social Sciences 10A-B-C, or Sociology 10A-B-C. Formerly Social Sciences 11A-B-C. (V)

ARCHAEOLOGY

40A The Rise of Civilization (4). Surveys of archaeological techniques and theories for the study of cultural evolution. Specific theories of the origins of the state and civilization. Sociopolitical structure of simple, egalitarian societies, and origins of complex society. Overview of the archaeological database. Formerly Anthropology 31T.

BIOLOGICAL AND MEDICAL ANTHROPOLOGY

50A Primate Societies (4). Surveys the lifeways of nonhuman primates. Topics include general characteristics of primates, their evolution, geographical distribution, ecology, and social relationships. Special emphasis on the adaptive aspects of primate societies and their relevance for understanding humans and the nature of human societies. Same as Psychology 73P. Formerly Anthropology 31F.

50B Comparative Social Behavior (4). A comparative analysis of social behavior throughout the animal kingdom, emphasizing general theories of social behavior rather than the behavior of any particular species. The evolution of mating systems, parental behavior, altruism, and cooperation. Primate and human behavior presented as special cases of these general theories. Formerly Anthropology 31P.

AREA STUDIES

60A Japan and America: Comparative Cultural and Social Analysis (4). A study of Japanese culture in Japan and the United States with special focus on points of conflict or difference with Western values and behavior. Formerly Anthropology 31Y. (VII-B)

RESEARCH METHODS

71A-B-C Ethnography I, II, III (4-4-4) F, W, S. Introductory topics in ethnography. Students may be required to make one or more field trips to Mexico at their own expense. Cost varies depending upon mode of travel and availability of outside funds for support. Formerly Anthropology 35A-B-C.

89 Special Topics in Anthropology (1 to 4) F, W, S. Prerequisites vary. May be repeated for credit as topic varies.

Upper-Division

Course modules emphasizing anthropology are assigned numbers from 120–180. NOTE: Students wishing to complete a module in the anthropology series may do so by taking any three upper-division anthropology courses.

SOCIAL AND ECONOMIC ANTHROPOLOGY

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. Formerly Anthropology 131A. (VII-B)

121D Cross-Cultural Studies of Gender (4). An anthropological approach to the study of gender roles, sexual division of labor, marriage, and reproduction. Prerequisite: Anthropology 2A or 2B. Same as Humanities 172F. Formerly Anthropology 131B. (VII-B)

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. Formerly Anthropology 131G.

121J Urban Anthropology (4). Cultural roles of urban centers and processes of urbanization in comparative perspective, focusing on both nonwestern, nonindustrial societies of past and present; the relationship between modern urban centers and Third World peoples. Migration, urban poverty, adaption, and the social and political integration of rural folk in urban settings in Africa, Asia, and Latin America. Formerly Anthropology 131H. (VII-A)

122S Sociolinguistics (4). Sociolinguistic varieties of language examined from different points of view: geographical, temporal, and cultural. Prerequisite: Linguistics 3. Same as Humanities 170LA and Linguistics 168A.

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. Formerly Anthropology 131E. (VII-B)

125B Ecological Anthropology (4). The study of relationships between human communities and their natural environments. The role of environment in shaping culture; the effects of extreme environments on human biology and social organization; and the anthropologists' role in studying global environmental problems such as African famine and the destruction of tropical rain forests. Prerequisite: Anthropology 2A, 2B, or 2C. Formerly Anthropology 131F. (VII-B)

125P-Q The Economics of Traditional Societies I, II (4-4). 125P: Models and ethnographic descriptions of noncommodity exchange relations of the form that characterize intergroup and intragroup economic processes of many tribal societies. Includes analyses of gift exchange and exchanges within the household. **125Q:** Devoted entirely to supervised research by class members. Prerequisite: Economics 20A-B-C; Economics 152A or Anthropology 125A recommended. Same as Economics 152P-Q. Formerly Anthropology 131X-Y. (VII-B)

125X Immigration in Comparative Perspective (4). Examines issues related to the migration and settlement of immigrants. Although the focus is on the Mexican migration to the United States, comparisons are also made to immigrant groups from Korea, Japan, Southeast Asia, Central America, the Caribbean, and Europe. Formerly Anthropology 131I. (VII-A)

126N Political Economy of Economic Development (4). Focuses on fundamental factors affecting process of economic evolution and development. Most emphasized factors include methods by which economic surplus is appropriated by well-situated social groups and the characteristics of the economic policies of such groups. Prerequisites: Economics 20A-B-C. Strongly recommended prior or concurrent courses: Economics 10A-B-C or equivalent. Same as Economics 148D. Formerly Anthropology 131Z. (VII-B)

129 Special Topics: Social and Economic Anthropology (1 to 4) F, W, S. Prerequisites vary. May be repeated for credit as topic varies.

CULTURAL AND PSYCHOLOGICAL ANTHROPOLOGY

131F Philosophy of Culture (4). An introduction to philosophies of culture that have been formulated by philosophers, historians, anthropologists, and sociologists. Intended to provide an understanding of the culture concept in order to study culture acquisition and the diverse cultures of the United States. Same as Comparative Culture 100E. Formerly Anthropology 131P. (VII-A)

131S Alcohol, Society, and Humankind (4). Clinical, experimental, historical, and cross-cultural data are surveyed in the interest of understanding drunkenness and alcoholism as social phenomena. Prerequisite: Psychology 7A. Same as Psychology 173S. Formerly Anthropology 131J.

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, aspects of politically linked personality, cognitive anthropology, the psychology of narrative forms, and comparative national character studies. Prerequisite: Anthropology 2A or Psychology 7A. Same as Psychology 173A. Formerly Anthropology 131M.

132B Cognitive Anthropology (4). Focuses on individual and cultural differences and similarities in the categorization and organization of semantic structures. Relation of variations in these conceptual structures to other systems of behavior. Formerly Anthropology 131N.

134A Medical Anthropology (4). Cultural and social influences on the distribution of disease and the experience of illness, the representation of cultural knowledge about illness, patterning of emotional expression and psychiatric illness treatment decision making, the structure of health care systems and therapeutic processes.

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.

134K Mind, Body, and Health (4). Description of the theory of adaptive potential, is part of a new field called "Health Anthropology," and its linkage to politics and ideology at the macro level of analysis and to health and individual well-being at the micro level. Studies of stress and coping, authoritarianism, Third World dominance, and general cultural dynamics. Formerly Anthropology 131L.

135A Religion and Society (4). An examination of the relationship between belief systems and social structure, with case studies drawn from at least two Asian societies placed in a general comparative context. Formerly Anthropology 131S. (VII-B)

135H Hinduism: The Great Tradition (4). Introduction to Hindu civilization and various aspects of Hinduism. Focuses on the Great Tradition from Vedic to modern times in India, looking not only at the religious content but at the social and economic system which supported and transmitted this tradition. Formerly Anthropology 134D. (VII-B)

138A Anthropology of Art (4). Explores the forms, functions, and meanings of the visual and performing arts in their sociocultural contexts. Focuses on arts of the Third and Fourth Worlds, using anthropological accounts to consider questions of cross-cultural aesthetics and symbolic analysis. Formerly Anthropology 131T.

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. Formerly Anthropology 131Q.

138N Readings in Ethnomusicology (4). A guided introduction survey through some of the written research in the field of ethnomusicology. Assigned readings and class discussion. Prerequisite: consent of instructor.

139 Special Topics in Cultural and Psychological Anthropology (1 to 4) F, W, S. Prerequisites vary. May be repeated for credit as topic varies.

ARCHAEOLOGY

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. Formerly Anthropology 132C.

142A Chronological Dating Techniques in Environmental Reconstruction (4). Radiocarbon dating is a good example of a common technique which has wide application for a number of different fields. Surveys a number of dating techniques which can be used to establish a chronological framework. Particular emphasis on applications for environmental reconstruction and archeology. Prerequisite: Social Ecology E8. Same as Social Ecology E163. Formerly Anthropology 132A.

143A Environmental Geology and Ecology for Land-Use Planning (4). Applications of a number of scientific techniques used in environmental science are surveyed with reference to specific case studies. Students incorporate these techniques and sampling procedures into their research designs. Prerequisites: Social Ecology E8 and SE10 or equivalent; previous or concurrent enrollment in Anthropology 143LA; consent of instructor; senior standing preferred. Same as Social Ecology E142. Formerly Anthropology 132B.

143LA Laboratory for Environmental Science and Land-Use Planning (4). Provides weekly lecture, lab experiments, and demonstration of techniques in the environmental sciences. Three to five Saturday field trips as well as a four-day field trip to study specific environmental problems. Prerequisites: Social Ecology E8 and previous or concurrent enrollment in Anthropology 143A; consent of instructor; senior standing preferred. Same as Social Ecology E142L. Formerly Anthropology 132BL.

149 Special Topics in Archeology (1 to 4) F, W, S. Prerequisites vary. May be repeated for credit as topic varies.

BIOLOGICAL AND MEDICAL ANTHROPOLOGY

159 Special Topics in Biological and Medical Anthropology (1 to 4) F, W, S. Prerequisites vary. May be repeated for credit as topic varies.

AREA STUDIES

160M Women and Arabic Society (4). Overview of Arabic history and way of life emphasizing Morocco. Transformation of women's condition during the past half-century. Lecture and seminar format. Same as Political Science 154B. Formerly Anthropology 134J. (VII-B)

161N Asians in California (4). An exploration of the demographic, economic, and social characteristics of major Asian immigrant groups which have settled in California since the mid-eighteenth century. The roughly chronological sequence moves from rural to urban communities, focusing on the roles of kinship, friendship, and ethnic networks in immigration and adaptation. Formerly Anthropology 134M.

161R Japanese Culture in California (4). Field work and library research to explore problems and issues concerning Japanese immigrants and visitors in California. Topics include values, expectations, philosophy, religion, and psychology. Formerly Anthropology 134N.

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. Formerly Anthropology 134Q. (VII-A)

162A Peoples and Cultures of Latin America (4). Covers the prehistory of Latin America (indigenous cultures), then the impact of colonial rule on Indian societies and cultures. With this background, contemporary culture groups are then examined. Covers communities in Mexico, Guatemala, Ecuador, Peru. Formerly Anthropology 134U. (VII-B)

162N Rural Mexico (4). Social and economic life in rural Mexico; transformation of peasant economic life; influences of regional, national, and international political and economic forces; gender roles; sources of labor migration. Formerly Anthropology 134R. (VII-B)

162P Music of Greater Mexico (4). The musical forms and traditions of Mexico and the Mexican United States with a particular view to the development of regional mestizo styles and the evolution of contemporary Mexican-based forms in the United States.

163A Peoples of the Pacific (4). The cultural history and recent developments among the Pacific peoples of Polynesia, Micronesia, Melanesia, New Guinea, and Australia. Formerly Anthropology 134A. (VII-B)

163G Women in Asia (4). Compares the changing position of rural and urban women in India, China, and other selected areas in Asia over time (primarily the twentieth century). Same as Humanities 172J. Formerly Anthropology 134E. (VII-B)

163K Korean Society and Culture (4). Introductory background to the social and cultural forces that affect the lives of the Koreans, with special reference to those in the United States. Considers traditional values and contemporary issues within a historical framework. Same as Sociology 175. Formerly Anthropology 134S.

163T Castes and Tribes of India (4). An introductory survey of the range of social structures in South Asia; an undergraduate anthropology area studies course. Formerly Anthropology 134C. (VII-B)

164A African Societies (4). Comparative studies of the cultures and societies of Sub-Saharan Africa, with emphasis on ecological adaptations, social organizations, languages, and social change. Prerequisite: Anthropology 2A. Formerly Anthropology 134F.

164K South Africa (4). Explores current political events in South Africa and uses these events to explore some classic issues in social and political theory. Historical and anthropological approaches are combined. Formerly Anthropology 134T. (VII-B)

169 Special Topics in Area Studies (1 to 4) F, W, S. Prerequisites vary. May be repeated for credit as topic varies.

METHODS AND FORMAL REPRESENTATIONS

171H-I History of Science I, II (4-4). A two-quarter sequence focusing on understanding and appreciating science. Reviews history of science for those characteristics that are essential for the accumulation of knowledge. Implications for growth of social and behavioral sciences are explored. Participation involves extensive reading and individual case history reports.

172A-B Techniques of Data Collection I, II (4-4) F, W. Basic methods and theories of proximity and preference data collection including pile-sort, ranking, triads, item-by-use matrices, rating, and free-listing. Multidimensional scaling, clustering, and quadratic assignment approaches are utilized. Extensive hands-on computer use. Prerequisite: Social Sciences 10A-B-C, 100A-B-C, or consent of instructor. Same as Social Sciences 101G-H. Formerly Anthropology 135B-C.

173A Content Analysis and Text Semiotics (4). How to do various kinds of content analysis of folktales, novels, films, and thematic apperception tests. Learning how to do eidochronic analysis; score for achievement, power, and intimacy motives; segment texts; discovering text structures and semiotic codes; and extract ethnographic information from texts. Formerly Anthropology 135D.

173B Mind, Myth, and Television (4). A study of myth, folktales, modern literature, film, and television, and how these expressive forms have shaped the direction of human development. Topics range from ancient rituals to modern ideology. Formerly Anthropology 135K.

174A World Cultural Comparisons (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. Open to lower-division students, particularly those who have completed Comparative Culture 20C. Same as Comparative Culture 140G. Formerly Anthropology 135F. (VII-B)

175A Cantometrics (4). Cantometrics is a method for the analysis of music based on sound rather than music notation. Devised by Alan Lomax, cantometrics yields measurable data on the world's many forms of music and permits mapping of global patterns following Murdock.

179 Special Topics: Methods and Formal Representations (1 to 4) F, W, S. Prerequisites vary. May be repeated for credit as topic varies.

SPECIAL SEMINARS

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. Formerly Anthropology 137A.



Micronesian Studies Project Field Director Karen Nero and a UCI undergraduate student who is a native Hawaiian examine Satawalese fishing lures.

190 Senior Thesis (4-4-4). Prerequisite: consent of instructor.

197 Field Study (4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

198 Group Independent 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.

Department of Cognitive Sciences

Mary-Louise Kean, 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, and perception. The main areas of research strength within the Department are visual and auditory perception, experimental psychology, and mathematical psychology. The Department offers a degree program in Psychology.

Information on graduate programs and courses begins on page 249.

Program in Psychology

Students should be aware that psychology courses are offered in several different departments and programs. Students interested in developmental, clinical, environmental, health, or social psychology, or in psychology and the law, are advised to consult the course listings in the Program in Social Ecology section. Students interested in the biological mechanisms of behavior are advised to consult the course listings in the School of Biological Sciences section. Students interested in human experimental psychology as applied to the study of sensation, perception, learning, and cognitive processes are advised to consult the following course listings in the Department of Cognitive Sciences section.

It is anticipated 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 1992 should be sure to file their application before November 30, 1991.

In the event that more applications for the Psychology major are received than can be accommodated, applicants may be subject to screening beyond minimum University of California admissions requirements. Freshman applicants not selected for Psychology at the time of admission may opt for the undeclared major within the School of Social Sciences or for any other open major for which they qualify. However, lower-division courses prerequisite to upper-division major study are available to all students, and selection to the Psychology major at the end of the sophomore year will be based on performance in those courses.

Continuing-Student Applicants. Sophomore students who were not admitted to the Psychology major upon their admission to the University may apply for entry into the major as a junior. Such students should apply during the first five weeks of the spring quarter of their sophomore year in the Undergraduate Counseling Office, 120 Social Science Tower. To be considered for admission into the Psychology major as a junior, students must have completed the following: (a) at least two quarters of the mathematics requirement (Psychology 10A-B, Social Sciences 10A-B, Anthropology 10A-B, Economics 10A-B, Sociology 10A-B, Social Sciences 100A-B, or Mathematics 2A-B) with a minimum average grade of B- (2.7); (b) Psychology 7A (Introduction to Psychology) and at least eight additional credits in psychology courses with a minimum average grade of B (3.0) across all psychology courses; and (c) the lower-division writing requirement. Selection criteria also will include affirmative action considerations.

Transfer-Student Applicants: See page 39.

Requirements for the Bachelor's Degree

Students who entered UCI prior to fall 1991 should refer to the *Catalogue* edition in effect the year they entered to determine which major requirements they must satisfy.

University Requirements: See pages 50-53.

School Requirements: See page 223.

Departmental Requirements for the Major in Psychology School requirements must be met and must include 15 courses (60 units) as specified below:

- A. Psychology 7A.
- B. Two introductory courses (eight units) in the social sciences chosen from Anthropology 2A or 2B, Economics 1, Linguistics 3, Political Science 6A, 6B, or 6C, Sociology 1.
- C. A one-quarter course in experimental psychology or research methods. (For 1991-92, this requirement may be satisfied by taking Psychology 12A, 112A and 112LA, or 112D and 112LD.)
- 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 (Abnormal Psychology), 120D (Developmental Psychology), 120H (History of Psychology), 120P (Personality Theories), 130A (Perception and Sensory Processes), 140C (Cognitive Science), and 140L (Principles of Learning Theory).
- E. Seven additional courses (four or more units each) with emphasis in psychology, distributed as follows:
 - (1) No more than three of the seven may be lower-division.
 - (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 Semiotics and Language combined), and 170–179 (Interdisciplinary Studies).

- (3) Certain courses offered in the School of Biological Sciences and the Program in Social Ecology may be used in partial satisfaction of this requirement. Such courses must be chosen from the approved list of psychology-related courses in these disciplines.

NOTE: Psychology majors are strongly encouraged to take Biological Sciences 79–80–81 in satisfaction of the natural sciences portion of the breadth requirement (Category II). Furthermore, it is strongly recommended that students who intend postbaccalaureate work in psychology take the sequence Psychology H111A-B-C or Psychology 112D, 112LD, and 120H. Some psychology graduate programs require calculus (which, at UCI, may be satisfied by taking Mathematics 2A-B-C).

Honors Program in Psychology: The honors program in Psychology is open to selected juniors who are majoring in Psychology. It provides basic training 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 winter 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 (H101A-B) in the winter and spring quarters. Participants in the honors program are expected to complete: (1) Biological Sciences 80 and 81, or suitable substitutes; (2) Psychology 120H; and (3) course work beyond the breadth 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 in the honors program, 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, each student must successfully complete a senior honors thesis as part of the senior-year course work.

Psychology Minor Requirements

Requirements for the minor in Psychology are met by taking seven psychology courses (28 units) as specified below:

- A. Psychology 7A.
- B. Three upper-division psychology courses chosen from the following core courses in Psychology: 120A (Abnormal Psychology), 120D (Developmental Psychology), 120H (History of Psychology), 120P (Personality Theories), 130A (Perception and Sensory Processes), 140C (Cognitive Science), 140L (Principles of Learning Theory).
- C. Three additional psychology courses (four or more units each) chosen from either lower-division or upper-division courses.

D. In addition, the School mathematics and computer science requirement (School requirement A) must be satisfied.

Courses in Psychology

Lower Division

7A Introduction to Psychology (4) F, W, S, Summer. Weekly topics include human development, memory and problem solving, learning theory, perception, biological mechanisms, emotions and motivation, personality theory, social psychology, and behavior disorders. Students are expected to volunteer for participation in several ongoing laboratory experiments. Formerly Psychology 7. (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, Economics 10A-B-C, Social Ecology 13, Social Sciences 10A-B-C, or Sociology 10A-B-C. Formerly Social Sciences 11A-B-C. (V)

12A Introduction to Experimental Psychology (4). Explores the application of scientific research methods to the study of psychology. The development of testable hypotheses, the design of experiments that test a hypothesis adequately, the collection of experimental data, and the interpretation of results. Prerequisite: Psychology 7A; Psychology 10A-B or any other 10A-B series in the School of Social Sciences (10B may be taken concurrently), or equivalent. Formerly Psychology 51B.

13A Issues and Practice in Experimental Psychology (4). Discussion and analysis of problems involved in conducting experiments and in drawing conclusions. For students considering a research career in the social sciences, particularly psychology, and also for students wanting to learn about the purposes and methods of research. Formerly Psychology 51A. (III)

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. Psychology 21A and Social Ecology S123 may not both be taken for credit. Formerly Psychology 55C. (III)

21F Psychology and the Family (4). Examines theories, research, implications, and applications of psychology as they relate to the understanding of family structure, process, development, and change. Prerequisite: Psychology 7A. Formerly Psychology 55E.

23A Principles of Applied Psychology (4). Introduction to the understanding of human functioning through cognitive and behavioral analysis and application. Formerly Psychology 50K.

23E Social Psychology of Higher Education (4). Focuses on issues and concerns unique to freshmen enrolled at a major research institution. Theoretical framework for understanding the role of higher education in today's society. The field of research and inquiry from a social/psychological perspective. Influence of critical understanding of key issues. Although priority is given to freshmen, beneficial for all students. Same as Sociology 53. Formerly Psychology 58A. (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. Formerly Psychology 50T. (III)

55A Introduction to Semiotics (4). How humans and other animals communicate with each other by means of symbols and other signs. The symbols of everyday life, of movies and literature, of religion and society. Symbolic systems and symbolic evolution. Same as Linguistics 80 and Social Sciences 13A. Formerly Psychology 50R. (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. Formerly Psychology 50A. (III)

73P Primate Societies (4). Surveys the lifeways of nonhuman primates. Topics include general characteristics of primates, their evolution, geographical distribution, ecology, and social relationships. Special emphasis on the adaptive aspects of primate societies and their relevance for understanding humans and the nature of human societies. Same as Anthropology 50A. Formerly Psychology 55N.

76M Language and the Mind (4). The relationship of knowledge of grammar to mental processes and mental representations. How linguistic behavior is rule governed. Same as Linguistics 52.

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. Psychology 78A /Sociology 31 and Social Ecology S86 may not both be taken for credit. Formerly Psychology 50D. (III)

89 Special Topics in Lower-Division Psychology (4). Prerequisites vary. May be repeated for credit as topic varies.

Upper Division

H101A-B Honors Seminar in Psychology I, II (4-4). Focuses on the research activities, including the honors thesis research projects, of each student, and on the research of various Cognitive Sciences faculty. Students discuss their research interests in the early as well as the later stages of their projects. Research projects and project write-ups are required. Prerequisite: open only to students in the Honors Program in Psychology. Formerly Psychology H150A-B.

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 7A and either Psychology 10A-B-C, any other 10A-B-C series in the School of Social Sciences, Social Sciences 100A-B-C, or Mathematics 2A-B-C. Open only to students in the Honors Program in Psychology or by consent of instructor. Formerly Psychology H151A.

H111LA Honors Experimental Psychology Laboratory (2) F. Corequisite: Psychology H111A. Formerly Psychology H151LA.

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. Formerly Psychology H151B.

H111LB Honors Advanced Experimental Psychology Laboratory (2) W. Corequisite: Psychology H111B. Formerly Psychology 151LB.

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. Formerly Psychology H151C.

112A Experimental Psychology (4) F. Emphasis on design of experiments and analysis of results. Experiments are conducted in laboratory sections. Prerequisites: Psychology 7A; either Psychology 10A-B-C or any other 10A-B-C series in the School of Social Sciences, Social Sciences 100A-B-C or Mathematics 2A-B-C. Restricted to Psychology majors only. Corequisite: Psychology 112LA. Formerly Psychology 151A.

112LA Experimental Psychology Laboratory (2) F. Corequisite: Psychology 112A. Formerly Psychology 151LA.

112B Advanced Experimental Psychology (4) W. Design and analysis of multivalent, factorial, and correlational studies. Students prepare proposals for independent research. Prerequisite: Psychology 112A. Corequisite: Psychology 112LB. Formerly Psychology 151B.

112LB Advanced Experimental Psychology Laboratory (2) W. Corequisite: Psychology 112B. Formerly Psychology 151LB.

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. Open only to Psychology majors. Formerly Psychology 151C.

112D Observational Research Methods in Psychology (4). Introduction to research methods in social psychology, with emphasis on observational studies. Each student is given the opportunity to propose, carry out, analyze, and report a piece of original social psychology research. Prerequisites: Psychology 10A-B-C, any other 10A-B-C series in the School of Social Sciences, or Social Sciences 110A-B-C. Mathematics 2A-B-C recommended. Statistics may not be taken concurrently. Restricted to Psychology majors with upper-division standing only. Formerly Psychology 151G.

112LD Observational Research Methods in Psychology Laboratory (2). Corequisite: Psychology 112D. Formerly Psychology 151GL.

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; Psychology 10A or any other 10A course in the School of Social Sciences or equivalent. Formerly Psychology 151E.

114A Discrete Mathematics and Probability Taught by the Gentle ARIS (4). A fully computerized course presenting the elementary notions of logic, set theory, and probability theory using the ARIS system. Students work at their own pace and are assigned homework problems finely tuned to their mastery of the material. Students meet with the instructor weekly. Intended for the novice student, especially in Social Sciences.

114C Computers and Psychology (4). Introduction to computer applications in applied and research psychology, including automated psychological assessment, diagnosis, prescription developments, artificial intelligence applications, and "expert systems." Prerequisite: Psychology 12A or 112A. Formerly Psychology 151L.

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. Psychology 120A and Social Ecology S111 may not both be taken for credit. Formerly Psychology 155A.

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 and 12A. Psychology 120D and Social Ecology S127 may not both be taken for credit. Formerly Psychology 156A.

120H History of Psychology (4). A history of the development of various schools and systems of psychological thought. Prerequisites: Psychology 7A and upper-division standing. Formerly Psychology 153C.

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 and upper-division standing. Psychology 120P and Social Ecology S170 may not both be taken for credit. Formerly Psychology 154A.

121A-B-C Creative Learning in Children I, II, III (4-4-4) F, W, S. Seminar, two hours; field work, six hours. Students assist in teaching children at the Farm School, recording and studying their interactions with the children, and developing materials for use in the School. The Farm School is ungraded; the children range in age from five to twelve. Students in any major are eligible for the course. Formerly Psychology 156B-C-D.

121D Models of Addiction (4). Review of medical, psychological, sociological, moral, behavioral, personality, and other models of the addiction process and its treatment. A variety of common addictive behaviors are considered, including alcoholism, drug addiction, gambling, work, and smoking. Formerly Psychology 155H.

121M 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. Prerequisite: Psychology 7A. Formerly Psychology 151F.

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. Formerly Psychology 154S.

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. Prerequisites: Psychology 12A or equivalent; upper-division standing. Formerly Psychology 151U.

131A Advanced Perception and Sensory Process (4). A continuation of Psychology 130A. In-depth study of selected topics, emphasizing the way questions in sensory research are formulated and pursued. Prerequisite: Psychology 130A. Formerly Psychology 151V.

131D Perceptual Development (4). Human perceptual development is examined from birth through childhood with emphasis on localization, discrimination, and pattern recognition abilities in vision and audition. The role of perceptual development in cognition is evaluated. Prerequisites: Psychology 130A and upper-division standing. Formerly Psychology 156M.

133C Introduction to Color Science (4). How to specify colors (colorimetry), how to systematize colors (color system), what cognitive processes underlie perception, and naming of colors. Examples from experimental psychology, color TV, and photography. Color harmony and aesthetic aspects of color are not covered. Prerequisite: Psychology 7A or consent of instructor. Formerly Psychology 151N.

133M Psychophysical Methods and Models (4). Experimental and theoretical methods used in the study of vision, with special emphasis on signal detection theory and linear system analysis. Intended for students who plan to pursue graduate training in fields related to visual sciences; familiarity with elementary probability is assumed. Some knowledge of calculus is helpful. Prerequisite: Psychology 130A. Formerly Psychology 151R.

133S Introduction to Scaling (4). Procedures to quantify sensation, preference, ability, and attitude are explained (unidimensional scaling), with applications to various problems in psychology and some problems in industry and marketing. Prerequisite: Mathematics 2A or equivalent. Formerly Psychology 151J.

135A Visual Attention Research (2). Review and discussion of current research on the role of attention in the perception of visual patterns. Experiments are designed, run, and analyzed. Students have the option of participating as subjects or writing a term paper. Prerequisites: Psychology 7A and consent of instructor. Formerly Psychology 151K.

135T Advanced Topics in Visual Perception (4). Topics in vision related to ophthalmology and optometry. A course for students considering a career in eye care. Prerequisite: Psychology 130A or consent of instructor. Formerly Psychology 151D.

136H Sound and Hearing (4). Presents the ways in which scientists think about problems that are both very well understood today and lie at the frontier of current knowledge. The interplay between theory and experiment is emphasized. Some theory is qualitative and some is quantitative. Three major topics are covered: transmission of sound; transformation of sound pressure wave; and behavioral correlates to sound. Prerequisite: Psychology 130A.

139 Special Topics in Perception and Sensory Processes (4). Prerequisites vary. May be repeated for credit as topic varies. Formerly Psychology 151Z.

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. Prerequisites: Psychology 12A or equivalent. Formerly Psychology 153A.

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. Prerequisites: Psychology 12A or equivalent. Formerly Psychology 153B.

141D Cognitive Development (4). An analysis of intellectual development from birth through maturity. Mechanisms of cognitive growth from Piagetian and current information processing theories are examined. Recent research on developmental changes in concept formation, knowledge structures, memory skills, and problem-solving strategies is presented. Prerequisites: Psychology 120D and upper-division standing. Formerly Psychology 156H.

141N Human Neuropsychology (4). Disorders of human brain functions are used to illustrate basic issues and findings in the study of brain and behavior. Topics include development and aging, perception and action, language, laterality, learning and memory, spatial behavior, psychopathology. Prerequisites: Biological Sciences 80 or 81 or equivalent, or consent of instructor. Formerly Psychology 153H.

143H Human Factors in Information Processing (4). A survey of design and environmental factors that determine effective human transfer of information. Prerequisites: Psychology 140C and upper-division standing. Formerly Psychology 153J.

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, chess, and theorem proving. Prerequisites: Psychology 7A, 140C, and upper-division standing. Formerly Psychology 153E.

143R Psychology of Reading (4). Surveys the major components of skilled reading and the determinants of successful reading acquisition. Examination of contemporary models of skilled reading. Focuses on models of the development of reading. Research on the causes of developmental dyslexia. Prerequisite: Psychology 7A; 140C or Linguistics 150A. Same as Linguistics 157. Concurrent with Social Science 243R. Formerly Psychology 153R.

145B Neurobiology of Learning and Memory (4). Basic issues concerning the nature of behavioral plasticity and information storage and their neural substrates. Prerequisites: Biological Sciences 105, or Biological Sciences 79 and 80, or consent of instructor. Same as Biological Sciences 158. Formerly Psychology 153D.

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. Formerly Psychology 156P-Q-R.

146A Human Memory (4). Developments in the area of memory; the history of memory research as well as theories of the nature of memory. Visual memory, recognition memory, high-speed scanning, free recall, short-term memory, mnemonics, retrieval, and the relationship of memory to thinking. Selected theoretical formulations for memory. Prerequisites: Psychology 10A-B-C or any other 10A-B-C series in the School of Social Sciences or equivalent; Psychology 46A. Formerly Psychology 153F.

146D Human Memory Disorders (4). Focuses on models and methods of assessing human memory and its disorders. Exposure to conventional and new assessment devices provided. Prerequisite: Psychology 46A or consent of instructor. Formerly Psychology 153G.

149 Special Topics in Cognition and Learning (4). Prerequisites vary. May be repeated for credit as topic varies.

SEMIOTICS AND LANGUAGE

154C Foundations of Communication (4). The logical and semiotic foundations of communication and signification. Same as Linguistics 184. Formerly Psychology 157E.

155A Introduction to Cognitive Semiotics (4). Symbols and their webs. The foundation course in cognitive semiotics, comprising an introduction both from the philosophical standpoint represented by Peirce and from the linguistic standpoint represented by Dalgarno and Saussure. Current cognitive developments are studied. Same as Linguistics 180. Formerly Psychology 157A.

155H History of Semiotic Theory (4). The history of semiotic theory from Aristotle through the Greek and Roman Stoics and St. Augustine to Peirce and the present. The seventeenth-century obsession with the creation of a "universal and philosophical language" is treated. Prerequisite: Psychology 155A. A reading knowledge of Greek and/or Latin is very helpful. Same as Linguistics 181. Formerly Psychology 157H.

155I Cognitive Iconics (4). The study of writing systems (alphabets, runes, Mayan and Egyptian hieroglyphics) and their evolution and modern changes introduced spontaneously through "mistakes," with a view toward exploring aspects of the human mind. Same as Linguistics 182. Formerly Psychology 157B.

155T Semiotic Theory of Writing Systems (4). Ancient and modern writing systems, ranging from Sumerian pictographs through Egyptian and Mayan hieroglyphs to the Phoenician alphabet and its modern descendants (including our own). Distinctive traits of written language (what can be written that cannot be said?), and issues distinguishing hand-execution from eye-recognition. Same as Linguistics 183. Formerly Psychology 50U.

156B Language and the Brain (4). Analysis of current research on the biological bases of human linguistic capacity. Topics include development, focusing on hemispheric specialization and plasticity; the localization of specific linguistic functions in adults, with an emphasis on the study of aphasia; the relation of linguistic capacity to general cognitive capacity, considering especially research on retardation. Prerequisites: Biological Sciences 80 and 81, or Biological Sciences 105, or consent of instructor. Same as Linguistics 158 and Biological Sciences 160. Formerly Social Sciences 142D.

159 Special Topics in Semiotics and Language (1 to 4). Prerequisites vary. May be repeated for credit as topic varies.

INTERDISCIPLINARY STUDIES

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; aspects of politically linked personality; cognitive anthropology; psychology of narrative forms; and comparative national character studies. Prerequisite: Anthropology 2A or Psychology 7A. Same as Anthropology 132A. Formerly Psychology 156N.

173S Alcohol, Society, and Humankind (4). Clinical, experimental, historical, and cross-cultural data are surveyed in the interest of understanding drunkenness and alcoholism as social phenomena. Prerequisite: Psychology 7A. Same as Anthropology 131S. Formerly Psychology 154E.

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 Comparative Culture 120M. Formerly Psychology 154R. (VII-A)

174B Social Psychology of African-American Families (4). A social psychological analysis of African-American families presented from an Afro-centric perspective with an examination of historical and contemporary factors which affect their structure and functioning and the psychosocial development of family members. Issues and challenges facing African-American families in the twenty-first century. Same as Comparative Culture 120N. Formerly Psychology 154T. (VII-A)

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 develop-

ment, peer group relationships, sexuality and sex role preference. Analysis of power struggle between adolescent subcultures and institutions of dominant society. Same as Comparative Culture 120J. Formerly Psychology 155U.

174D Adolescent Psychological Disorders (4). Examines how predictable internal and external adolescent conflicts involving self, family, society become intensified until a breakdown in coping pattern occurs. Specific syndromes indicative of increased adolescent stress as well as major psychological, social, and psychiatric treatment approaches are discussed. Prerequisites: senior-standing Psychology or Social Ecology majors; one course in adolescent psychology. Same as Comparative Culture 120K.

175L Linguistic Theories as Psychological Theories (4). Examines the claim that a central foundational tenet of contemporary linguistics is that linguistic theories are a type of psychological theory pertaining to the nature of human knowledge and language. Critical discussion from linguistic, psychological, and philosophical perspectives. Prerequisites: Linguistics 3 and Psychology 7A. Same as Linguistics 152.

175P Introduction to Psycholinguistics (4). Study of a particular topic in the psychology of language with particular emphasis on syntax and semantics. Same as Linguistics 150.

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 such topics as the formation of political attitudes, the process of political decision-making, and the nature of political leadership. Same as Political Science 164B. Formerly Psychology 154H.

176M Models of Collective Decision Making (4). Introduction to formal models of social choice, with emphases on the theory of committees and elections; economic models of social interaction, game theory, and coalition behavior; and judgmental accuracy of group decision making. Prerequisite: Economics 20A-B-C. Same as Political Science 161F. Formerly Psychology 154M.

178D Theories of 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 Social Ecology J133. Formerly Psychology 155B.

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. Formerly Psychology 154Q.

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). 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.

Program in Comparative Culture

Peter Clecak, Program Director

The course of study in Comparative Culture concentrates upon the main minority groups of the United States in a comparative framework. What historical, cultural, and social experiences do Afro-Americans, Asian-Americans, Chicanos, and Native Americans share in common? How are their experiences related to the larger culture and society of the United States? In order to explore such questions, students become engaged in interdisciplinary study, using the concepts and methods of anthropology, art history, history, literary criticism, political economy, psychology, and sociology.

Information on graduate programs and courses begins on page 249.

Requirements for the Bachelor's Degree

University Requirements: See pages 50–53.

School Requirements: See page 223.

Program Requirements for the Major

School requirements must be met and must include 15 courses (60 units) as specified below:

- A. Two introductory social science courses (eight units), chosen from Anthropology 2A, 2B, 2C, 2D, Economics 1, Linguistics 3, Political Science 6A, 6B, 6C, Psychology 7A, Social Sciences 5A, 5B, 5C, or Sociology 1.
- B. Comparative Culture 20A, 20B, 20C.
- C. Comparative Culture 100D, 100E, plus three courses (12 units) selected from one or a combination of the following modules: Comparative Culture 120, 130, 140.
- D. Three courses (12 units) selected from the Comparative Culture 140 series.
- E. One course (4 units) designated as Comparative Culture 159 and one course (4 units) designated as Comparative Culture 169.

Students also are encouraged to take related courses outside the School of Social Sciences if such courses are appropriate to their educational goals.

Comparative Culture Minor Requirements

Requirements for the minor in Comparative Culture are met by taking seven courses (28 units) as specified below:

- A. One course chosen from the Comparative Culture 20A, 20B, 20C series.
- B. Six courses chosen from Comparative Culture modules 100, 130, 140, 159, 169 (one course each from the 159 and 169 series).

Courses in Comparative Culture

Lower-Division

20A Introduction to Minority Cultures in American Society (4). A survey of main minority cultures in the United States, comparing their histories, evolution, and cultural individuality. Emphasis on cultural variations in the U.S. as well as the processes and changes, historical and current, within cultural communities. Formerly Comparative Culture 70A. (III, VII-A)

20B 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. Formerly Comparative Culture 70B. (III, VII-A)

20C 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. Formerly Comparative Culture 70C. (III, VII-A)

21A The History of Minorities in American Films (4). An examination of the cultural content of American films as it applies to the resident minority groups in the United States. Films projecting images of Afro-Americans, Asians, Native Americans, and Latinos/Hispanics are screened. Formerly Comparative Culture 70T. (VII-A)

21B History of the Documentary Motion Picture (4). Documentary films from 1874 to the present. Films screened trace the evolution of techniques, styles of leading documentarists, and the importance of the documentaries in the American film industry. Students with special inter-

est in documentary film production, writing, distribution, and criticism may develop field projects. Formerly Comparative Culture 74A.

21C The Motion Picture in Contemporary American Society (4). Brief history of commercial film's social economic development; how and by whom theatrical films are made; motives, machinations, techniques of filmmakers in creation, distribution, and promotion of commercial films; contributions, special problems of various individuals involved in modern filmmaking. Formerly Comparative Culture 70X.

31A-B Jazz: Anatomy, History, and Sociology (4-4). Jazz as an art form, its historical development, sociocultural origins and impact. **31A:** Development of jazz from ragtime and the blues through Dixieland and the swing era. **31B:** Bop revolution, subsequent stylistic innovations such as "cool," "funk," "avant-garde," "the third stream," "fusion." Prerequisites: ability to read music and/or understanding of common musical usages and notations. Formerly Comparative Culture 72C-D. (VII-A)

Upper-Division

100–119: DISCIPLINES AND CULTURE

100D Scope and Problems of Interdisciplinary Studies (4). An exploration of the problems of interdisciplinary scholarship and the interrelationship among social science and humanities disciplines. Formerly Comparative Culture 170A.

100E Philosophy of Culture (4). An introduction to philosophies of culture that have been formulated by philosophers, historians, anthropologists, and sociologists. Intended to provide an understanding of the culture concept in order to study culture acquisition and the diverse culture of the U.S. Same as Anthropology 131F. Formerly Comparative Culture 170B. (VII-A)

120–129: SOCIAL INQUIRY

120A Economics and Culture (4). Introduction to economic issues, ideas, and institutions. Relationships among production, distribution, consumption, ownership; their impact upon culture. Comparative economic systems and relative economic condition of ethnic and socioeconomic groups in the U.S. The works of major economists such as Malthus, Marx, and Veblen utilized to discuss relationship between economics and ideology. Formerly Comparative Culture 170C. (VII-A)

120B 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. Formerly Comparative Culture 173I. (VII-A)

120C Politics and Culture (4). Examination of the factors affecting the formation and structure of political/labor movements among racial/ethnic groups in the U.S. Relationship of domestic movements to international developments is also analyzed. Formerly Comparative Culture 170D.

120D Society and Culture (4). An introduction to the processes underlying stratification in American society with emphasis on race/ethnic/class divisions. These processes also are examined in relationship to the works of major theorists such as Marx, Weber, and Durkheim. Formerly Comparative Culture 170E. (VII-A)

120E Ethnic and Racial Communities (4). Various conceptions of community and their relevance to understanding the experience of racial minorities in the United States are examined. Specific comparisons are made among the different major racial groupings as well as between the dominant and minority populations. Formerly Comparative Culture 173C. (VII-A)

120F History and Culture (4). An introduction to ethnohistory, focusing on the contributions of history to the interdisciplinary study of sociocultural systems. Empirical focus on the slave South, with intensive analysis of major secondary sources. Formerly Comparative Culture 170F.

120G Chicano History (4). A survey of the history of the Spanish-speaking people of the Southwest. Includes Mexican settlement, American conquest, and the development of the Chicano national minority. Formerly Comparative Culture 173F. (VII-A)

120H History of Chicano Education (4). Examines the relationship between the development of the public education system and the Chicano community in the U.S. Formerly Comparative Culture 173H. (VII-A)

120J 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 the power struggle between adolescent subcultures and institutions of dominant society. Same as Psychology 174C. Formerly Comparative Culture 173A.

120K Adolescent Psychological Disorders (4). Examines how predictable internal and external adolescent conflicts involving self, family, society become intensified until a breakdown in coping pattern occurs. Specific syndromes indicative of increased adolescent stress as well as major psychological, social, and psychiatric treatment approaches are discussed. Restrictions: senior standing; Psychology or Social Ecology major; one previous course in adolescent psychology. Same as Psychology 174D. Formerly Comparative Culture 173B.

120L Psychology of the Afro-American (4). Historical overview of the development of Black psychology and the Afro-American frame of reference. Topics include personality development, psychological assessment, issues in education, Black mental health, and the role of the Afro-American psychologist in the community. Formerly Comparative Culture 173J. (VII-A)

120M 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-A)

120N Social Psychology of African-American Families (4). A social psychological analysis of African-American families presented from an Afro-centric perspective with an examination of historical and contemporary factors which affect their structure and functioning and the psychosocial development of family members. Issues and challenges facing African-American families in the twenty-first century. Same as Psychology 174B. (VII-A)

120R-S Comparative U.S. Hispanic Populations: History and Culture (4). U.S. Hispanic population consists of subpopulations with cultures similar yet different. Topics include: Spanish Empire in North America and Caribbean; Old Southwest; nineteenth-century Cuba; Mexican-American War; Spanish-American War; Mexican and Latin American migrations to the U.S. (VII-A)

129 Special Topics: Social Inquiry (1 to 4). Examines a single American ethnic group or culture, or takes up a specific cultural problem or aspect of an American ethnic group. Offered on an occasional basis. May be repeated for credit as topic varies.

130A Cultural Analysis of Literature (4). How the literature of minority American cultures can be studied as a cultural document. Focus on how culture affects creation of literature. Formerly Comparative Culture 171A.

130B Literature and Ethnicity (4). Examines the works of several American minority authors in order to discuss the relationship of ethnicity as a social phenomenon to literature. Formerly Comparative Culture 173D. (VII-A)

130C Language and Culture (4). Spoken and written language and its relation to thought and other forms of human culture: verbalization of morality, values, religion, aesthetics, and politics; problems interpreting ideological works in ancient and recent times; semantics and psychology of speech, image, gesture. Formerly Comparative Culture 171G.

130D Folklore and Popular Culture (4). Forms of folklore and their relationships to popular culture and to social and cultural analysis. Formerly Comparative Culture 171B.

130E Comparative American Folklore (4). A study of major genres of folk expression in American history, focusing on how folklore contributes to an understanding of American culture. Attention is given to the songs, folktales, and folklife of various American groups. Formerly Comparative Culture 171C.

130F 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. Formerly Comparative Culture 173E. (VII-B)

130G Religion and Culture (4). A survey of the major issues in the comparative study of religious beliefs and behavior of minority American cultures. Formerly Comparative Culture 171D.

130H Cultural Analysis of Visual Arts (4). Explores the relationships between visual arts and the culture and society of which they are a part. The works of nonliterate societies as well as those of the Western world are analyzed and compared. Formerly Comparative Culture 171F. (VII-A)

130J 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.) Formerly Comparative Culture 173G. (VII-A)

130K-L-M Television and Culture I, II, III (4-4-4). Examines the relationships between television and culture, and the structure of the television industry and its relationship to other American social institutions. Concentrates on methods of analyzing various television genres, from comedies, game shows, and soap operas to documentaries and news. Formerly Comparative Culture 171T-U-V.

130R-S-T Gospel Choir I, II, III (2-2-2). A study of the music of Afro-American spirituals and gospels. Approach is one of cultural authenticity rather than "musically straight." Several performances are given throughout the year. Participation is by audition. Sequence may be repeated for credit once. Formerly Comparative Culture 171K-L-M.

139 Special Topics: Expressive Forms (1 to 4). Examines cultural issues and problems in the expressive forms of ethnic groups and American society. Offered on an occasional basis. May be repeated for credit as topic varies.

140-149: WORLD CULTURES

140A American Culture (4). A survey of the historical development of dominant American society and culture. Aims to identify dominant social values and to explore their implications for the development of American society. Formerly Comparative Culture 172A.

140B Afro-American Culture (4). A survey of the development of Afro-American culture with a focus on the United States. Topics include African and New World sources and contemporary forms of Afro-American social and cultural life. Formerly Comparative Culture 172B. (VII-A)

140C Asian-American Culture (4). A survey of socio-political-economic dimensions of Asian-American people: their past, present, and future. Formerly Comparative Culture 172C. (VII-A)

140D Chicano Culture (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. Formerly Comparative Culture 172D. (VII-A)

140E Native American Culture (4). An introduction to the history, evolution, ecology, and culture areas of North American Indians. Describes how Native Americans once were and why they were that way. A brief introduction to contemporary Native American culture is provided. Formerly Comparative Culture 172E. (VII-A)

140F Latin American Culture (4). Study of political, social, economic, and intellectual forces in Latin America. Major topics include Latin American thought; social stability and instability including revolutionary change, and changing Latin American cultures. Formerly Comparative Culture 172F. (VII-B)

140G World Cultural Comparisons (4). Lecture, three hours. Introduction to ethnology/ethnography, comparative research and theory, culminating in processes of discovery and hypothesis testing using world cultural databases to which students can contribute. Open to lower-division students, particularly those who have completed Comparative Culture 10C. Same as Anthropology 174A. Formerly Comparative Culture 172G. (VII-B)

159 Special Topics: International (4). Special topics courses, offered on an occasional basis, probe different cultures and societies international in scope, or examine cross-cultural variations among non-American societies. May be repeated for credit as topic varies. Formerly Comparative Culture 178A-Z. (VII-B)

169 Special Topics: Multicultural (4). Special topics courses, offered on an occasional basis, examine a single American ethnic group or culture, or study a special cultural problem or aspect of an American ethnic group. May be repeated for credit as topic varies. Formerly Comparative Culture 179A-Z. (VII-A)

197A-B-C Field Study in the Chicano Community (4-4-4) F, W, S. Emphasis on applied bicultural education in the Barrio. Students participate in classroom situations with Chicano elementary school students. Prerequisite: consent of instructor. Pass/No Pass Only. Course may be repeated for credit for three quarters only. Open to students with an interest in specializing in bicultural, bilingual education.

Department of Economics

Charles Lave, *Department Chair*

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. Economics 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.

The Department of Economics is composed of faculty with interests in a broad range of areas within micro- and macroeconomics, and the evaluation of public policy. It is especially strong in applied econometrics, public choice, and applied microeconomics including transportation, energy, industrial organization, labor, and urban development. Members of the Department maintain close ties with members of the Department of Politics and Society and the Graduate School of Management.

It is anticipated that the number of students who are qualified to elect Economics as a major will exceed the number of positions available. Students applying for admission for fall 1992 should be sure to file their application before November 30, 1991.

In the event the major in Economics receives more qualified applicants than can be accommodated, applicants may be subject to screening beyond minimum University of California admissions requirements. Freshman applicants not selected for Economics at the time of admission will be encouraged to opt for the Undeclared major within the School of Social Sciences or for any other open major for which they qualify. However, lower-division courses prerequisite to upper-division major study are available to all students, and selection to the Economics major at the end of the sophomore year will be based on performance in those courses.

Continuing-Student Applicants. Sophomore students who were not admitted to the Economics major upon their admission to the University may apply for entry into the major as a junior. Such students should apply during the first five weeks of the spring quarter of their sophomore year in the Undergraduate Counseling Office, 120 Social Science Tower. The following three criteria must be met to be considered for admission as a junior: the student must have (a) completed two quarters of calculus (Mathematics 2A-B) with a minimum grade of B, (b) completed the basic economic theory sequence (Economics 20A-B-C) with a minimum grade of a B in at least two of the three quarters, and (c) must have completed the lower-division writing requirement. Selection criteria also will include affirmative action considerations.

Transfer-Student Applicants: See page 39.

Information on graduate programs and courses begins on page 249.

Requirements for the Bachelor's Degree

Students who entered UCI prior to fall 1991 should refer to the *Catalogue* edition in effect the year they entered to determine which major requirements they must satisfy.

University Requirements: See pages 50-53.

School Requirements: See page 223.

Departmental Requirements for the Major

School requirements must be met and must include 15 courses (60 units) as specified below:

- A. Economics 20A-B-C; this course is a prerequisite for almost all upper-division economics courses.
- B. All majors must demonstrate competence in probability and statistics prior to enrolling in any upper-division economics course, or they must be concurrently enrolled in an approved probability and statistics course. Students may satisfy this requirement by completing Economics 10A-B-C or an equivalent course.
- C. All majors must demonstrate competence in calculus by completing Mathematics 2A-B or equivalent courses. Students must complete at least Mathematics 2A or an equivalent course prior to enrolling in Economics 100A.
- D. Economics 100A-B-C.
- E. Four additional four-unit upper-division economics courses. At least one of the four courses must be research-oriented and involve the production of a significant research paper. This required paper may be approved by any faculty member in economics. It is strongly recommended that students take either the data analysis sequence (Economics 121A-B-C) or the econometrics sequence (Economics 123A-B-C).

Honors Program in Economics

To graduate in the honors economics program, School requirements must be met and must include 19 courses (76 units) as specified below:

- A. Economics 20A-B-C.
- B. Mathematics 2A-B-C must be completed prior to taking Economics H100A.
- C. Mathematics 3A or an equivalent course.
- D. Economics 10A-B-C or equivalent courses.
- E. Economics H100A-B-C.
- F. Economics 123A-B-C or equivalent.
- G. An honors-level research paper.
- H. A minimum of four additional upper-division economics courses.
- I. Achievement of a grade point average of at least 3.0 in upper-division economics courses taken to fulfill requirements.

Courses in Economics

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. Formerly Economics 4. (III)

10A-B-C Probability and Statistics in Economics I, II, III (4-4-4) F, W, S. An introduction to probability and statistics. Emphasis on a thorough understanding of the probabilistic basis of statistical inference. Examples from economics. Students who receive credit for Economics 10A-B-C may not receive credit for Anthropology 10A-B-C, Psychology 10A-B-C, Social Ecology 13, Social Sciences 10A-B-C, or Sociology 10A-B-C. Formerly Social Sciences 11A-B-C. (V)

20A-B-C Basic Economic Theory I, II, III (4-4-4) F, W, S. The fundamentals of economic theory: microeconomics and macroeconomics. *Theory of the behavior of firms and the behavior of consumers: markets, supply/demand, utility maximization, resource allocation, and efficiency. Government behavior: monetary and fiscal policy, inflation and unemployment.* Formerly Economics 12A-B-C. (III)

Upper-Division

100-119: ECONOMIC THEORY

100A-B-C Intermediate Economic Theory 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-C; Mathematics 2A or equivalent. Formerly Economics 111A-B-C.

H100A-B-C Honors Intermediate Economic Theory I, II, III (4-4-4) F, W, S. An advanced and mathematical version of Economics 100A-B-C for students in the Honors program. Prerequisites: Economics 20A-B-C and Mathematics 2A-B-C. Formerly Economics H111A-B-C.

101A Advanced Macroeconomics (4). Consumption and investment theories. Theories of money demand and supply. Capital accumulation, economic growth, productivity and supply-side theory. Rational expectations in macroeconomic models of inflation and unemployment. Macroeconomic dynamics; balance of international payments; fiscal and monetary policies to counteract demand and supply shocks. Prerequisite: Economics 100C. Formerly Economics 111D.

101B Advanced Microeconomics (4). A presentation of the theory of production and distribution, relying heavily upon formal mathematical models. Prerequisites: Economics 100A-B-C and Mathematics 2A-B-C. Formerly Economics 111E.

102A The Economics of Accounting Principles (4). Introduction to accounting concepts and principles, including the accounting model and accounting cycle, transaction analysis, and the preparation of financial statements. An analysis of the similarities and differences between accounting and economic concepts (e.g., value, profits). Formerly Economics 111F.

104A History of Economic Thought (4). Discussion of the principal schools of economic thought. Emphasis on ideas expressed by Smith, Malthus, Ricardo, Marx, Jevons, J.B. Clark, Bohm-Bawerk, Wicksell, Marshall, and Keynes. Assignments include readings (in English) of important selections from the original works. Prerequisite: Economics 20A-B-C. Formerly Economics 111X.

109 Special Topics in Economic Theory (4). Prerequisites vary. May be repeated for credit as topic varies.

120-124: QUANTITATIVE METHODS

121A-B Data Analysis I, II (4-4). Practical applications-oriented course on multiple regression. How to discover and explore general socioeconomic models in data. Prerequisite: simple probability and statistics (Social Sciences 10A-B-C strongly recommended). Same as Social Sciences 101A-B. Formerly Economics 101A-B.

121C Data Analysis-Writing (4). Advanced regression analysis. Covers practical techniques for solving model-building problems. Strong emphasis on learning clear, effective writing. Prerequisite: Economics 121B or 123B. Same as Social Sciences 101C. Formerly Economics 101C.

123A-B-C Econometrics I, II, III (4-4-4) F, W, S. Specification, estimation, and testing of econometric models. Applications in various areas of microeconomics and macroeconomics. Prerequisites: Mathematics 2A-B-C; Economics 10A-B-C or consent of instructor. **123C:** Seminar course in which students complete either an applied or theoretical econometric research project. Formerly Economics 101D-E-F.

124A Time Series Analysis (4). Introduction to the basic techniques of time series analysis. Univariate time series models and forecasting. Multivariate models. Transfer function models. Relations between time series models and econometric models. Prerequisite: Economics 123A. Formerly Economics 101N.

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: Economics 20A-B-C. Formerly Economics 112B.

132A Portfolio Selection and Capital Market Theory (4). Optimal design of portfolios based upon mean-variance characteristics. An examination of the efficiency of present-day capital markets. Prerequisites: Economics 10A-B-C and 100A-B-C. Formerly Economics 112C.

134A Corporate Finance (4). Provides an analytic approach to modern economic finance theory. Covers capital markets, investment decisions, decision theory under uncertainty, capital asset pricing, and contingent claims theory. Prerequisite: Economics 100A-B-C. Formerly Economics 113Z.

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

141A-B-C Economic Analysis of Government Behavior I, II, III (4-4-4). The study of government using the tools of economics. **141A:** The influence of voters' preference on governmental policy; Arrow's impossibility theory; the Downsian theory of voting. **141B:** The effects of various taxation and expenditure policies, such as social security. **141C:** Research course in which students write a paper testing one of the theories covered in the first two quarters of the sequence. Prerequisite: Economics 100A-B. Same as Political Science 127A-B-C. Formerly Economics 113A-B-C.

142A-B-C Industrial Organization I, II, III (4-4-4) F, W, S. 142A: The theory of monopoly and oligopoly, including price discrimination, the welfare loss due to monopoly, advertising, and product quality. **142B:** Regulation of industries such as airlines, trucks, and utilities. Actual regulation performance and rationale. **142C:** Antitrust. Current practice in light of economic theory concerning efficiency and the behavior of monopolists. Prerequisite: Economics 100A-B-C. Formerly Economics 113H-I-J.

143K-L-M Economics of Information and Incentives I, II, III (4-4-4). **143K:** Study of how incentive structures affect the decisions and actions of economic agents. The consequences of differing property rights for the existence and operation of markets and their implications for the use and allocation of resources. Contracts, structure of the firm, mining, primitive economies, fisheries, environmental management, invention, and innovation. **143L:** Information as an economic resource focusing on principles which govern the production, distribution, and value of information. Implications of different information structures for decision and the operation of markets. Auctions and procurement methods, contracts, searching warranties, and price guarantees, truthful and nontruthful mechanisms. **143M:** Directed research and writing. Prerequisites: Economics 100A-B-C. Formerly Economics 113K-L-M.

144A-B-C Urban Economics I, II, III (4-4-4). **144A:** Focus on spatial impact of economic process within urban areas. **144B:** Emphasizes economic theory and the assessment of the urban problem including housing, transportation, environmental quality, and public finance. **144C:** Allows students to apply knowledge of urban and transportation economics in the conduct of individual research. Prerequisites: Economics 20A-B-C. Strongly recommended prior or concurrent enrollment in Economics 10A-B-C. Formerly Economics 113N-O-P.

144T Transportation Networks (4). Models of transportation demand; optimal utilization of transportation networks; cost-benefit analysis of network design projects; the economic impact of transportation networks. Prerequisite: Economics 20A-B-C. Same as Social Sciences 118A. Formerly Economics 113R.



The Farm School, a small, open, and ungraded elementary school located in a rural setting adjacent to the campus, serves as a research facility for faculty and students having interests in children and how they learn.

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 policies regarding these problems. Emphasis on microeconomic aspects of environmental problems. Prerequisites: Economics 20A-B-C. Formerly Economics 113Q.

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 concurrent enrollment in Economics 100B. Formerly Economics 113F.

148A-B Political Economy of National Defense I, II (4-4). 148A: Analysis of the adoption of military solutions to international problems; military budgets, weapons policy, and procurement; distribution of benefits and costs of military systems. Emphasis given to nuclear military policy. Focuses on empirical and descriptive works on policy and practice. **148B:** Research seminar. Research paper required. Prerequisites: Economics 20A-B-C. Formerly Economics 113D-E.

148D Political Economy of Economic Development (4). Focuses on fundamental factors affecting process of economic evolution and development. Most emphasized factors include methods by which economic surplus is appropriated by well-situated social groups and the characteristics of the economic policies of such groups. Prerequisites: Economics 20A-B-C. Strongly recommended prior or concurrent courses: Economics 10A-B-C or equivalent. Same as Anthropology 126N. Formerly Economics 111Z. (VII-B)

148I-J-K Political Economy of International Relations I, II, III (4-4-4). 148I-J: Migration, trade, and finance in competitive markets; bargaining and compacts; hegemony and imperialism; alliances; multinational firms; international institutions; international law; war and national boundaries; common markets; nationalism; super power conflicts. **148K:** Research seminar. Prerequisites: Economics 20A-B-C. Formerly Economics 113S-T-U.

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). Analysis of wage determination and the role of labor in production. **151A:** Develops, extends, and applies basic supply/demand analysis. **151B:** Labor market discrimination. **151C:** Original research by students. Prerequisites: Economics 10A-B-C and 20A-B-C. Formerly Economics 114A, 114B, 114H.

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. Formerly Economics 114L. (VII-B)

152P-Q The Economics of Traditional Societies I, II (4-4). 152P: Models and ethnographic descriptions of noncommodity exchange relations of the form that characterize intergroup and intragroup economic processes of many tribal societies. Includes analyses of gift exchange and exchanges within the household. **152Q:** Devoted entirely to supervised research by class members. Prerequisites: Economics 20 A-B-C; Economics 152A or Anthropology 125A recommended. Same as Anthropology 125P-Q. Formerly Economics 114P-Q. (VII-B)

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). What is money, what does it do, and why is it important? How do depository institutions create money? What is the Federal Reserve Board, what does it do, and how does government affect its behavior? Why are interest rates so high/low, and who is responsible? How about inflation? Prerequisites: Economics 20A-B-C and 10A-B-C. Formerly Economics 115A.

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 110C. Formerly Economics 115B.

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 100A-B or concurrent enrollment in 100B. Formerly Economics 115C.

161D Advanced Money and Banking (4). What happened in the Great Depression and why? Could it happen again? What is the transmission mechanism? What do economists know about the money supply process? What is the evidence on the demand for money? What are the more important current issues for monetary policy? Prerequisites: Economics 10A-B-C and 20A-B-C. Formerly Economics 115G.

162A The Japanese Economy (4). An analysis of the structure and performance of the Japanese economy in the post-World War II period. *The mechanism and policies of rapid growth. Japan's industrial structure, labor market, and financial system. United States-Japanese trade friction and policy issues.* Prerequisites: Economics 100A-B-C. Formerly Economics 115I.

168A-B Comparative Economic Systems I, II (4-4). Survey of models and real-world examples of different economic systems, ranging from market capitalism to planned socialism, with special emphasis on resource allocation mechanisms and contemporary economic problems such as inflation, unemployment, defense spending, labor, and energy shortage. Prerequisites: Economics 20A-B-C. Formerly Economics 115P-Q.

169 Special Topics in Economics in Macroeconomics (4). Prerequisites vary. May be repeated for credit as topic varies.

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. Students may take geography courses toward completion of the Social Sciences major. The course of study leading to the B.A. in Geography is not available at this time.

Courses in Geography

Lower-Division

Social Sciences 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. Not offered 1991-92. (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. Not offered 1991-92. (III)

5C Environment and Resources (4). Analysis of landscapes, with special attention to California and the West. Emphasis on humans as agents of environmental change. Not offered 1991-92. (III)

Social Sciences 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. (III)

Social Sciences 18C Dynamics of the Physical Landscape (4). A seminar on landscape processes and the management of natural hazards (e.g., erosion, flooding, droughts, landslides, earthquakes). Emphasis on Southern California. Students research and make oral presentations on topics determined by agreement with instructor.

Social Sciences 18D Models in Economic Geography (4). Economic decision making in a spatial context: the location, distribution, and dynamics of economic activities. Theories of population growth, urbanization, industrial location, interregional trade, and regional planning. (III)

Upper-Division

Course modules emphasizing geography are assigned numbers 118.

Social Sciences 118 Geographical Analysis

118A Transportation Networks (4). Models of transportation demand; optimal utilization of transportation networks; cost-benefit analysis of network design projects; the economic impact of transportation networks. Prerequisites: Economics 20A-B-C. Same as Economics 144T.

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.

118D Urban Policy (4). The first quarter of a series of urban policy issues in view of the principles of urban politics and urban administration. Special emphasis on transportation problems.

118E Urban Theory (4). Urban theory as it pertains to American metropolitan areas. Location theory, central place theory, and theories of urban land use and social areas. Prerequisite: Social Sciences 118D or consent of instructor.

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.

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 Sciences 5A recommended.

Social Sciences 119A-Z Special Topics in Geography (4) F, W, S. May be repeated for credit. Prerequisites vary.

Program in Linguistics

Robert C. May, Program Chair

Linguistics is the study of language. It is concerned with descriptions of human languages, with theories that seek to explain the nature of language, and with the uses of language. It is an inherently interdisciplinary field of study, with connections to other disciplines such as psychology, anthropology, sociology, biology, physics, mathematics, computer science, philosophy, and literature.

Information on graduate programs and courses begins on page 249.

Requirements for the Bachelor's Degree

University Requirements: See pages 50-53.

School Requirements: See page 223.

Requirements for the Major

School requirements must be met and must include 14-15 courses (56-63 units) as specified below:

- A. Five core courses: Linguistics 3, 110, 111, 120, and 121.
- B. Seven linguistics courses, at least five of which must be upper-division. One of these five upper-division courses must be 112, 122, or 143.
- C. Natural/Formal language requirement. One of the following three groups of courses:
 - (1) Three courses in a single language other than English, or equivalent. (Effective 1992–93: Three courses in a single language other than English, or equivalent. Courses taken to satisfy breadth requirement category VI do not qualify.)
 - (2) Two linguistics courses on the structure of foreign languages (e.g., Linguistics 165A, 165B, 166A, and as the topics might apply, 160 and 164).
 - (3) Two courses in logic (from the Philosophy series 30A-B or 130A-B-C) or computation (from the Information and Computer Science series 21–22).

Residence Requirement for the Linguistics Major: At least six upper-division courses required for the major must be completed successfully at UCI.

Linguistics Minor Requirements

Requirements for the minor in Linguistics are met by taking seven linguistics courses (28 units) as specified below:

- A. Linguistics 3, 110, and 120.
- B. Four additional linguistics courses, three of which must be upper-division.

Residence Requirement: At least four upper-division courses required for the minor must be completed successfully at UCI.

Courses in Linguistics

Lower Division

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. Formerly Social Sciences 3. (V)

11 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 2C or equivalent. Same as French 11.

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. Formerly Social Sciences 14A. (III)

52 Language and the Mind (4). The relationship of knowledge of grammar to mental processes and mental representations. How linguistic behavior is rule governed. Same as Psychology 76M. Formerly Social Sciences 14C.

66 Linguistics and Literary Theory (4). Explores relations between theoretical linguistics and literary theory, past, present, and potential. Structuralist approaches to language and literature, application of Chomskian linguistics to literature, deconstructive critiques of linguistic and literary theory. Formerly Social Sciences 14B.

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)

80 Introduction to Semiotics. (4). How humans and other animals communicate with each other by means of symbols and other signs. The symbols of everyday life, of movies and literature, of religion and society.

Symbolic systems and symbolic evolution. Same as Psychology 55A and Social Sciences 13A. (III)

99 Special Topics in Linguistics (4). Special topics at lower-division level. May be repeated for credit when topic varies. Formerly Social Sciences 49A-Z.

Upper Division

100–109: 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. Prerequisite: ICS 161. Same as ICS 162.

110–119: PHONETICS / PHONOLOGY

110 Introduction to Phonology (4). Basic concepts in phonetic description and phonological analysis. Prerequisite: Linguistics 3. Formerly Social Sciences 141H. (V)

111 Intermediate Phonology (4). Fundamentals of phonological theory. Intensive practice in phonological analysis. Prerequisite: Linguistics 110.

112 Advanced Phonology (4). Overview of recent developments in phonological theory. Prerequisite: Linguistics 111. Formerly Social Sciences 141I.

114 Current Topics in Phonological Theory (4). Phonology seminar. 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

120 Introduction to Syntax (4). Introduction to the formal analysis of language. Discussion of generative grammar, with focus on an understanding of constituent structure, grammatical derivation, and linguistic rules as these contribute to characterizing linguistically significant generalizations. Emphasis on English syntax. Prerequisite: Linguistics 3. Formerly Social Sciences 141A. (V)

121 Intermediate Syntax (4). Examination of syntactic phenomena and analysis, with emphasis on current issues in grammatical theory. Focus on the nature of syntactic rules, representations, and constraints as they determine empirical properties of language. Prerequisite: Linguistics 120.

122 Advanced Syntax (4). Intensive investigation of selected current topics in syntactic theory. Readings drawn from primary literature. Prerequisite: Linguistics 121. Formerly Social Sciences 141B.

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. Formerly Social Sciences 141C.

129 Special Topics in Syntax (4). Prerequisites vary. May be repeated for credit as topic varies.

130–139: MORPHOLOGY

132 Morphology and the Lexicon (4). Study of the lexical representations of words; relation of the lexicon to phonology, morphology, and syntax, with special emphasis on recent developments in the theories of morphology and syntax. Prerequisites: Linguistics 110 and 120. Formerly Social Sciences 141G.

139 Special Topics in Morphology (4). Prerequisites vary. May be repeated for credit as topic varies.

140–149: SEMANTICS

141 Philosophy of Language (4). Selected topics in the philosophy of language, e.g., reference and speech act theories, theories of meaning. Same as Philosophy 150.

142 Advanced Philosophy of Language (4). More technical and intensive developments of topics introduced in Linguistics 141. Prerequisite: Linguistics 141 or consent of instructor. Same as Philosophy 151.

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 121 or 142, Philosophy 130B, Mathematics 150, ICS 162, or consent of instructor. Same as Philosophy 152. Formerly Social Sciences 141D.

146 Pragmatics (4). The study in linguistic theory of the use of language by speakers as a tool for communication in context. Prerequisite: Linguistics 120. Formerly Social Sciences 141E.

149 Special Topics in Semantics (4). Prerequisites vary. May be repeated for credit as topic varies.

150–159: PSYCHOLINGUISTICS

150 Introduction to Psycholinguistics (4). Study of a particular topic in the psychology of language with particular emphasis on syntax and semantics. Same as Psychology 175P. Formerly Social Sciences 142C.

152 Linguistic Theories as Psychological Theories (4). Examines the claim that a central foundational tenet of contemporary linguistics is that linguistic theories are a type of psychological theory pertaining to the nature of human knowledge and language. Critical discussion from linguistic, psychological, and philosophical perspectives. Prerequisites: Linguistics 3 and Psychology 7A. Same as Psychology 175L. Formerly Social Sciences 142A.

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. Formerly Social Sciences 142G.

155 Readings in Child Language (4). In-depth reading and discussion of recent works in language acquisition. Concentration on relating research to contemporary linguistic theory. Prerequisite: Linguistics 51. Formerly Social Sciences 142E.

157 Psychology of Reading (4). Surveys the major components of skilled reading and the determinants of successful reading acquisition. Examination of contemporary models of skilled reading. Focuses on models of the development of reading. Research on the causes of developmental dyslexia. Prerequisites: Psychology 7A; Linguistics 150 or Psychology 140C. Same as Psychology 143R. Concurrent with Social Sciences 243R.

158 Language and the Brain (4). Analysis of current research on the biological bases of human linguistic capacity. Topics include development, focusing on hemispheric specialization and plasticity; the localization of specific linguistic functions in adults, with an emphasis on the study of aphasia; the relation of linguistic capacity to general cognitive capacity, considering especially research on retardation. Prerequisites: Biological Sciences 80 and 81 or Biological Sciences 105 or consent of instructor. Same as Biological Sciences 160 and Psychology 156B. Formerly Social Sciences 142D.

159 Special Topics in Psycholinguistics (4). Prerequisites vary. May be repeated for credit as topic varies.

160–169: LANGUAGE STUDIES

160 Language Typology (4). Cross-linguistic survey of major linguistic phenomena, especially as they pertain to word order patterns, phrase structure, grammatical relations, case marking, anaphora, inflections, movement processes and their constraints. Discussion of possible theories of linguistic parameterization and the relation between language universals and linguistic typology. Prerequisite: Linguistics 121.

163A American Dialects (4). A survey of the English-speaking dialects of the Americas. History of the making of atlases and dictionaries of the regional dialects. Special attention to phonological variation and sound change in progress. Prerequisite: Linguistics 3. Recommended: Linguistics 110. Formerly Social Sciences 144B.

163B The Structure of English (4). An examination of American English phonology, morphology, and syntax. Intended primarily 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. Formerly Social Sciences 144E.

163C Methods of Teaching English as a Second Language (4). Methods and materials for teaching English to speakers of other languages. Includes methodology for teaching children, adolescents, and adults. Field experience required. Recommended: Linguistics 3 and 154. Same as Spanish 114 and Teacher Education 140C.

164A Topics in Romance Languages (4). Prerequisites vary. May be repeated for credit as topic varies.

165A Linguistic Structure of Chinese (4). Introduction to the phonology and major syntactic patterns of Mandarin Chinese. Prerequisite: Chinese 2C or Linguistics 110 or 120 or consent of instructor. Same as East Asian Languages and Literatures 113.

165B Linguistic Structure of Japanese (4). Detailed analysis of essential grammatical aspects of Japanese. Comparison with aspects of English grammar. Course not designed to teach Japanese per se, but to study the grammatical characteristics of Japanese from the perspective of theoretical linguistics. Prerequisite: Linguistics 120 or consent of instructor. Same as East Asian Languages and Literatures 123.

166A Structures of Non-Indo-European Languages (4). Nontechnical analysis of essential grammatical aspects of selected non-Indo-European languages. Comparison and contrast with aspects of the grammars of more familiar Indo-European languages (e.g., English and French) are emphasized. Prerequisite: Linguistics 3. Formerly Social Sciences 141F.

166B Indian Languages of the Americas (4). Survey of Indian languages illustrating sound systems and structures. Linguistic affinities between North and South American languages. Prerequisite: Linguistics 3. Formerly Social Sciences 143C.

168A Sociolinguistics (4). Sociolinguistic varieties of language examined from different points of view: geographical, temporal, and cultural. Prerequisite: Linguistics 3. Same as Humanities 170LA and Anthropology 122S. Formerly Social Sciences 144A.

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 110. Formerly Social Sciences 143A.

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. Same as English 184. Formerly Social Sciences 143B.

178 History of Linguistics (4). Students complete at least 4,000 words of assigned composition based upon readings related to the history of linguistics. Linguistics majors are given admission priority. Prerequisites: satisfaction of lower-division writing requirement; junior status or consent of instructor. Formerly Social Sciences 143D.

179 Special Topics in Historical Linguistics (4). Prerequisites vary. May be repeated for credit as topic varies.

180–189: COGNITIVE SEMIOTICS

180 Introduction to Cognitive Semiotics (4). Symbols and their webs. The foundation course in cognitive semiotics, comprising an introduction both from the philosophical standpoint represented by Peirce and from the linguistic standpoint represented by Dalgarno and Saussure. Current cognitive developments are studied. Same as Psychology 155A. Formerly Social Sciences 144K.

181 History of Semiotic Theory (4). The history of semiotic theory from Aristotle through the Greek and Roman Stoics and St. Augustine to Peirce and the present. The seventeenth-century obsession with the creation of a "universal and philosophical language" is treated. Prerequisite: Linguistics 180. A reading knowledge of Greek and/or Latin is very helpful. Same as Psychology 155H.

182 Cognitive Iconics (4). The study of writing systems (alphabets, runes, Mayan and Egyptian hieroglyphics) and their evolution and modern changes introduced spontaneously through "mistakes," with a view toward exploring aspects of the human mind. Same as Psychology 155I. Formerly Social Sciences 144L.

183 Semiotic Theory of Writing Systems (4). Ancient and modern writing systems, ranging from Sumerian pictographs through Egyptian and Mayan hieroglyphs to the Phoenician alphabet and its modern descendants (including our own). Distinctive traits of written language (what can be written that cannot be said?) and issues distinguishing hand-execution from eye-recognition. Same as Psychology 155T.

184 Foundations of Communication (4). The logical and semiotic foundations of communication and signification. Same as Psychology 154C. Formerly Social Sciences 144J.

189 Special Topics in Cognitive Semiotics (4). Prerequisites vary. May be repeated for credit as topic varies.

190-199: SPECIAL COURSES

190 Senior Thesis (4-4-4). Prerequisite: consent of instructor.

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 Politics and Society

James N. Danziger, **Department Chair**

The Department of Politics and Society 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 political behavior. 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.

Information on graduate programs and courses begins on page 249.

Requirements for the Bachelor's Degree

University Requirements: See pages 50-53.

School Requirements: See page 223.

Departmental Requirements for the Major in Political Science

School requirements must be met and must include 11 courses (44 units) as specified below:

- A. Three introductory courses (12 units) in political science, Political Science 6A, 6B, and 6C.
- B. Two lower-division courses in political science (eight units).
- C. Six upper-division courses in political science (24 units). Three of these courses must form a 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).

During their junior year, Honors program students must enroll in at least one Honors Seminar (Political Science H180). These courses include intensive reading and discussion of the most influential works and fundamental issues in modern political science, and prepare students for rigorous independent research. Students should also prepare a written proposal for their senior thesis. Proposals are approved by their faculty advisor and filed with the Department and Undergraduate Counseling offices.

During their senior year, Honors Program students write a senior thesis, designed and completed under their faculty advisor's supervision. Students also enroll in the Honors Thesis Workshop (H182A). Students' transcripts note that they are in the Honors Program in Political Science and upon successful completion of their senior thesis, students graduate with "Honors in Political Science."

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 of the Political Science modules numbered 120-169.
- C. Three additional courses in political science, chosen from those numbered Political Science 6A, 6B, 6C, 20-69, or 120-169.

Courses in Political Science

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, VII-B)

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)

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. Formerly Political Science 23D. (III)

29 Special Topics for Introductory Courses (4). May be repeated for credit as topic varies.

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. Formerly Political Science 23B. (III)

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. Formerly Political Science 23A. (III, VII-B)

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. Formerly Political Science 26D. (VII-B)

42B War: Theory and Practice (4). Introduction to the basic problems of conventional warfare in the nuclear age. Topics include: the causes of war, termination of war, civil-military relations, the bureaucratic problems of modern militaries, innovations in military doctrine, and the morality of warfare. Formerly Political Science 23G.

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. Formerly Political Science 23C. (III)

52A The Study of Law (4). Introduces students to the relationships between the political and legal systems. Topics include functions and sources of law, judicial process and reasoning, and power and limits of courts. Case examples involving voting rights, race relations, gender discrimination, privacy and abortion, and rights of the accused. Formerly Political Science 121E.

52B 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. Formerly Political Science 24C.

53A Public Policy (4). Introduction to the developmental processes, determinants, and substance of U.S. national public policy. The stages of issue generation, agenda-building, policy resolution, and implementation are examined within the context of specific policy areas. Formerly Political Science 25C.

54A Basic Societal Issues (4). For students who have serious concern about peace, economic justice, the environment, or the future of human society generally. Attempts to provide an understanding of the fundamental issues underlying such social problems; fundamental alternatives available for attempting to cope with them. Same as Sociology 72. Formerly Political Science 26B. (III)

61A 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. Same as Sociology 41. Formerly Political Science 26A.

62A Authority Relations (4). An analysis of the nature, ubiquity, and types of authority relations. Attention is directed at the conditions for and bases of compliance and rebellion. Authority behavior in families, schools, work groups, and politics, as well as in "deviant" subcultures such as the Mafia, are examined. Same as Sociology 24. Formerly Political Science 24B. (III)

Upper-Division

120-129: AMERICAN POLITICS AND SOCIETY

121A The American Presidency (4). Presents a comprehensive survey of the American presidency and considers the question of political power. Formerly Political Science 121G.

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. Formerly Political Science 121V.

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 "under-class." Formerly Political Science 121A.

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. Formerly Political Science 121H.

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. Formerly Political Science 121J.

124A Law and Society (4). Examination of the law and its various roles in society. Topics include: the nature and meaning of law; legality and power in the American system; law as a mechanism for social change; and the role of law in dispute processing, social control, and compliance with judicial decisions. Formerly Political Science 121I.

124B 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. Formerly Political Science 121K.

124C Constitutional Politics (4). A study of the judicial process by which the Constitution is interpreted and the impacts of these interpretations on political institutions. Topics include: judicial selection and recruitment, various theoretical approaches to constitutional interpretation, the study of court decision making, and the impact of the courts on the political system. Formerly Political Science 121L.

124D 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. Formerly Political Science 121Z.

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? Formerly Political Science 121F.

126A Mexican-Americans and Politics (4). Examines political development of Mexican-Americans. Topics include the "territorial" roots of the Mexican-American in the Southwest, demographics, political leadership and organization; policy issues of immigration, bilingualism, education, and economics; relations with other minority groups; and the role of Mexican-Americans in U.S.-Mexico relations. Formerly Political Science 121B.

126B Urban Policy Analysis (4). Problem-oriented approach to urban political systems. Evaluation of the nature and quality of alternative analyses of a series of policy problems, such as low-cost housing, welfare policy, municipal transportation, law enforcement, community control. Prerequisite: consent of instructor. Formerly Political Science 121D.

127A-B-C Economic Analysis of Government Behavior I, II, III (4-4-4). The study of government using the tools of economics. **127A:** The influence of voters' preferences on governmental policy; Arrow's impossibility theory; the Downsian theory of voting. **127B:** The effects of various taxation and expenditure policies, such as social security. **127C:** Research course in which students write a paper testing one of the theories covered in the first two quarters of the sequence. Prerequisite: Economics 100A-B. Same as Economics 141A-B-C. Formerly Political Science 126D-E-F.

129 Special Topics in American Politics and Society (4). May be repeated for credit as topic varies.

130-139: POLITICAL THEORY AND METHODS

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. Formerly Political Science 125B.

131B Marx and Nietzsche (4). Juxtaposes and compares two of the most powerful and penetrating intellects of the nineteenth century. Lectures deal primarily with biographical material and historical setting. Reading and discussions emphasize systematic comparison of their respective views of human nature, history, social discontents, and the future of Western societies. Formerly Political Science 125U.

131C Varieties of Socialist Thought (4). Familiarizes students with a range of political thinkers who have written on the theme of socialism. In addition to Marx and members of the nineteenth-century English school of socialism, looks at socialist philosophies in the twentieth-century Third World, as well as writers on anarchism, syndicalism, revisionism, Lenin, and Mao. Formerly Political Science 125X.

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. Same as Sociology 127. Concurrent with Social Sciences 225Z. Formerly Political Science 125Z.

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. Prerequisite: upper-division standing. Same as Sociology 126. Formerly Political Science 125O.

133A-B Quantitative Theoretical Models in Political Science I, II (4-4). Methods of constructing quantitatively testable rational models. Interaction between empirical description and measurement, operationalization of concepts, and theoretical models. Models in physics and social sciences. Prerequisite: Mathematics 2A, Social Sciences 10A-B-C, or Social Sciences 100A-B-C. Formerly Political Science 125C-D.

133C Positive Theory (4). Examination of the nature of "positive theories" and of three major approaches to constructing such theories in macropolitics: formal-legal study, political-culture inquiry, and rational-choice theory. General discussion of approaches with specific reference to explaining political stability and instability, legitimacy, and dissent. Prerequisite: Political Science 6B. Concurrent with Social Sciences 227E. Formerly Political Science 122L.

133D Mathematical Analysis of Politics (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. Formerly Political Science 126N.

134A Foundations in Modern Political Science (4). Provides an introduction to major works by highly influential scholars such as de Tocqueville, Marx and Engels, Mosca, Durkheim, Weber, Wallas, and Lasswell, that constitute the foundation of contemporary political science. Prerequisite: upper-division standing. Concurrent with Social Sciences 223G. Formerly Political Science 123H.

134B Modern Political Theory (4). Focuses on a different aspect of modern political theory each quarter. Formerly Political Science 125F.

134C Theories of Political Structure (4). An examination of alternative theories of political structure with particular attention to those found among sociologists such as Parsons, anthropologists such as Lévi-Strauss and Nadel, psychologists such as Piaget, and Marxists such as Althusser and Poulantzas. The objective is to test the utility of these approaches for the construction of a theory of political structure. Prerequisite: upper-division standing. Formerly Political Science 125H.

134D Theories for the Study of Politics (4). A critical introduction to alternative theories used for the study of politics. Special attention will be given to interpreting political life as a system of institutions and behaviors. Formerly Political Science 125P.

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 Jürgen Habermas, Anthony Giddens, and Richard Rorty. Formerly Political Science 125S.

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. Prerequisite: upper-division standing and consent of instructor. Strongly recommended: 3.5 GPA and/or background in modern language analysis. Formerly Political Science 124F.

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. Prerequisite: upper-division standing. Same as Sociology 168. Formerly Political Science 126B.

135A Research Methods in Political Science (4). Introduction to the methods of social science research. Examines the principles of the scientific method and then applies these methods in a class research project. Heavy emphasis on hands-on research.

136A Political Economy (4). Introduction to the interrelationships between the American economy and American politics. Follows two basic premises: (1) one can know nothing about politics if one does not understand its relationship to the economy; and (2) one can know nothing about economics if one does not understand how the economy is related to politics and how political language is used for economic purposes. Recommended: introductory courses in politics and economics. Formerly Political Science 126K.

136B History of Political Economy (4). Introduction to the major ideas in political economy. Stresses linkages between the humanities and political economic thought. A consideration of premarket and socialist politico-economic systems focuses attention on the cultural, historical, and political influences on economic systems. Politico-economic thought is viewed as part of the larger body of scientific inquiry into the natures of nature and humanity. Formerly Political Science 126R.

139 Special Topics in Political Theory and Methods (4). May be repeated for credit as topic varies.

140-149: INTERNATIONAL RELATIONS

141A International Economic Relations (4). International economic relations examined in the context of international relations, interdependence, multinational corporations, and national sovereignty. Study of the role of international economic organizations (the IMF, GATT, the World Bank) and the business environment abroad. Formerly Political Science 129A.

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.

142A U.S. Foreign Policy: The Cold War Years (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. Formerly Political Science 123G.

142B U.S. Foreign Policy: 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. Formerly Political Science 123D.

142C International Relations of Japan (4). An undisputed economic "superpower," Japan is internationally more significant today than ever before. Examines the historical background, salient issues, and future scenarios of the international relations of Japan.

143A Change and Conflict in International Politics (4). An intensive, participation-oriented seminar designed to apply concepts of international relations theory to the study of change and conflict. Particular emphasis is

placed on the rise and decline of major powers and the role of international institutions. Formerly Political Science 123E.

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. Formerly Political Science 123J.

143C Arms Control and International Security (4). General introduction to the theory and practice of arms control between the nuclear superpowers. Examines the history of the arms race, the disenchantment with disarmament, and the development of arms control as an alternative or complement to military power as a means of ensuring security. Prerequisite: Political Science 42A or consent of instructor.

143D 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.

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. Formerly Political Science 123M.

145A Central America and U.S. Policy (4). Examines revolution in Latin America and U.S. response of accepting, shaping, or opposing "radical" regimes. Recent conflicts in Central America compared to Mexico, Bolivia, Guatemala, Cuba, and Grenada. The theory and practice of coercive diplomacy and the case of U.S.-Nicaragua relations (1979-90) studied in detail. Formerly Political Science 123N.

145B U.S.-Mexico Relations (4). U.S.-Mexico relationship applied to international relations theories of dependency, interdependency, influence, and leverage in bilateral negotiations. The linkages between domestic politics, changing style of foreign policy and issues of trade, oil, drugs, immigration, the common border, and the role of Mexican-Americans addressed. Formerly Political Science 123B.

146A 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. Issues include the use of force, pacific settlement of disputes among nations, human rights, and international terrorism. Formerly Political Science 123R.

149 Special Topics in International Relations (4). May be repeated for credit as topic varies.

150-159: COMPARATIVE POLITICS

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. Formerly Political Science 122E. (VII-B)

151B-C Politics in China I, II (4-4). **151B:** Introduction to the constitution, political system, and political parties of the People's Republic and the domestic and foreign policy of the Chinese government. **151C:** Chinese politics from the Communist takeover in 1949 to the present. Prerequisite for 151C: Political Science 151B or consent of instructor. Formerly Political Science 122S-T. (VII-B)

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. Formerly Political Science 122J. (VII-B)

151E Advanced Topics in Japanese Politics (4). Provides the advanced undergraduate the opportunity to probe beneath the surface of Japanese politics. The principle objective is to illuminate the inner workings of the "black box" in which policy is forged and to understand the roles and functions of powerful political actors and institutions. Strongly recommended: introductory course in Japanese politics.

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.

152A Politics in Britain (4). The politics and processes of government in Britain; the operation of parliamentary government; the responses of the political system to the issues and problems in contemporary Britain. Racism and immigration policy; economic stagnation and entry into the Common Market; Northern Ireland; the linkages between social class and politics. Formerly Political Science 122C.

152B French Politics and Society (4). A general overview of the nature of French politics and society. Some of the basic literature on France is read, and students select a topic of particular interest to them. Students with a reading knowledge of French particularly welcome. Formerly Political Science 122D. (VII-B)

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. Formerly Political Science 122G. (VII-B)

152D-E Soviet Society and Politics I, II (4). An overview of the present sociopolitical structure and of the major national cultures within the Soviet Union. **152E:** Expands on the themes of 152D plus individual research on any Soviet topic. Prerequisite for 152E: Political Science 152D or consent of instructor. Formerly Political Science 122A-B. (152D: VII-B)

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 West Germany. (VII-B)

153A Latin American Politics (4). Competing theoretical frameworks for the explanation of Latin American (under) development. Evolution of the position of Latin American countries in the world economic and political system and the impact of this position on internal economic and political structures and processes. Formerly Political Science 122U.

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, and other issues associated with French-English relations. Formerly Political Science 122M.

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. Formerly Political Science 122N.

154A The Politics of Sub-Saharan Africa (4). Traces the evolving patterns of political and economic developments affecting several sub-Saharan African political systems from pre-Colonial days to the present; the impact of these factors and the dilemmas they present to these nations in their struggle to fulfill the economic, political, and social demands and aspirations of their people. Formerly Political Science 122F.

154B Women and Arabic Society (4). Overview of Arabic history and way of life emphasizing Morocco. Transformation of women's condition during the past half-century. Lecture and seminar format. Same as Anthropology 160M. Formerly Political Science 126I. (VII-B)

154C Comparative Politics: Five Nations, Four Continents (4). Studies five countries in a comparative fashion: their respective political histories and cultural traditions, the actual differences among their superficially similar party, parliamentary, and executive institutions. The countries represent four continents and stand at varying levels of economic development. Formerly Political Science 122X. (VII-B)

155A Comparative Legal Systems (4). Comparative survey and analysis of legal systems, actors, cultures, and norms in nations of the following traditions: common law (U.S. and British Commonwealth), civil law (Western Europe and Latin America), socialist (Soviet Union and Eastern Europe), and Asian (China and Japan). Formerly Political Science 122O.

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. Formerly Political Science 126M.

155D Politics of Development (4). Problems developing countries face and political implications of various attempts to deal with these problems. Skills for comparative political analysis gained by focusing on the interdependence of social, economic, and political structures and processes. Formerly Political Science 122V.

155E-F-G Radical Social Proposals I, II, III (4-4-4). An examination of current proposals for alternative mass media systems, political systems, and economic systems. Focus is on proposals aimed at increased citizen participation and control, and at more equal distribution of wealth. Prerequisite for 155E: Political Science 54A or Sociology 72. Prerequisite for 155F: Political Science 155E or Sociology 172A. Prerequisite for 155G: Political Science 155F or Sociology 172B. Same as Sociology 172A-B-C. Formerly Political Science 124A-B.

159 Special Topics in Comparative Politics (4). May be repeated for credit as topic varies.

160-169: POLITICAL BEHAVIOR

161B Authority and Elites (4). Examines the formative experiences of political leaders and elites in authority relations, and the way these experiences influence their behavior and effectiveness as rulers. Emphasis on U.S., British, and French cases. Same as Sociology 171. Formerly Political Science 124J.

161C Political Ideology (4). Examination of how people think about and understand politics, covering a range of issues from the nature of liberalism-conservatism opposition to the development of ideological thought during the college years, and using the work of anthropologists, psychologists, sociologists, and political scientists. Formerly Political Science 124L.

161D-E Proseminar in Authority Relations (4-4). An examination of authority relations in workplaces and educational institutions in several societies. Two general issues are emphasized: adaptation to unfamiliar contexts and the possibility of "self-management" in organizations. Prerequisite: upper-division standing. Formerly Political Science 122H-I.

161F Models of Collective Decision Making (4). Introduction to formal models of social choice, with emphasis on the theory of committees and elections; economic models of social interaction, game theory, and coalition behavior; and judgmental accuracy of group decision making. Prerequisite: Economics 20A-B-C. Same as Psychology 176M. Formerly Political Science 126L.

162A Electoral 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. Formerly Political Science 121S.

162B 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? Formerly Political Science 125E.

162C 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. Formerly Political Science 124K.

162D 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. Formerly Political Science 124N.

162E Participation and Equality (4). Examination of authority relations in work places and schools with special emphasis on two issues: what are the possibilities of, and hindrances to, worker's participation in managerial decision-making? To what extent can access to schools be used to lower social and political inequalities? Concurrent with Social Sciences 224S. Formerly Political Science 124S.

163A Mass Political Behavior (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. Formerly Political Science 124C.

163B 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; and personality of revolutionary leaders. U.S. foreign policy and military doctrine on insurgency and low-intensity conflict reviewed. Formerly Political Science 126X.

163C 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: Economics 1, Political Science 6A, or Sociology 1. Same as Sociology 174. Formerly Political Science 126C.

164A Politics and Psychoanalysis (4). A brief introduction to psychoanalysis and its applicability to social and political behavior. Introductory lectures and subsequent applications acquaint the student with the varieties of psychoanalytic thought and the range of its applications.

164B 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 such topics as the formation of political attitudes, the process of political decision-making, and the nature of political leadership. Same as Psychology 176A. Formerly Political Science 126H.

165A Advanced Topics in the Study of Political Behavior (4). Topics include political socialization, effects of the mass media, and organization of political belief. Students are encouraged to review critically and to initiate an individual small-scale research project. Prerequisite: upper-division standing. Formerly Political Science 124M.

169 Special Topics in Political Behavior (4). May be repeated for credit as topic varies.

SPECIAL COURSES—UPPER DIVISION

H180A, B, C Honors Seminar in Political Science (4-4-4). Restricted to students enrolled in the Honors Program in Political Science. May be repeated for credit as topic varies. Formerly Political Science H127A-B-C.

181A-B Government Internship I, II (4-4). A supervised research course designed to prepare students academically prior to undertaking a government internship at either the state or national level and/or for the analysis of information gathered during a preceding internship period. Major research paper required. Students may enroll in either quarter or both. Prerequisite: consent of instructor. Formerly Political Science 127I.

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 Honors Program. Formerly Political Science H198.

190 Senior Thesis (1 to 4). Prerequisite: consent of instructor. May be taken for credit for a total of 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.

The Undergraduate Major in Social Science

Requirements for the Bachelor's Degree

University Requirements: See pages 50–53.

School/Major Requirements

- A. Familiarity with basic mathematical, computational, and statistical tools underlying modern social science. This requirement is met by passing a three-course sequence in mathematics (Anthropology 10A-B-C, Economics 10A-B-C, Mathematics 2A-B-C, Psychology 10A-B-C, Social Sciences 10A-B-C, Social Sciences 100A-B-C, or Sociology 10A-B-C) and one course in computer science (Information and Computer Science 1A or 21). These courses normally 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 introductory courses in the School of Social Sciences bearing a one-digit course number. These courses normally should be taken during the student's first year.
- C. An understanding of important advanced areas in social science. This requirement is met by passing satisfactorily nine upper-division courses in the School of Social Sciences, where at least three of these courses comprise a module. 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 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 majors. However, Information and Computer Science 1A, 21, and Social Sciences 100A 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.

Information on graduate programs and courses begins on page 249.

Courses in Social Science

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 Introduction to Social Science Analysis (4). Basic introduction to the art of using analytical models: how to create, test, use, and love them. Primary emphasis on developing skill and creativity in using concepts to predict, understand, and influence human behavior.

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)

10A-B-C Probability and Statistics in the Social Sciences I, II, III (4-4-4) F, W, S. An introduction to probability and statistics. Emphasis on understanding of the probabilistic basis of statistical inference. Examples from anthropology, economics, geography, linguistics, political science, psychology, and sociology. Students who receive credit for Social Science

10A-B-C may not receive credit for Anthropology 10A-B-C, Economics 10A-B-C, Psychology 10A-B-C, Social Ecology 13, or Sociology 10A-B-C. Formerly Social Science 11A-B-C. (V)

13A Introduction to Semiotics (4). How humans and other animals signify with and without language. The symbols of everyday life, of movies and literature, of religion and society. Symbolic systems and symbolic evolution. Same as Psychology 55A and Linguistics 80. (III)

89A-Z Special Topics in Social Sciences (2 to 4). May be repeated for credit as topic varies.

Upper-Division

100A-B-C Social Science Statistics I, II, III (4-4-4) F, W, S. 100A-B: Descriptive statistical concepts and techniques most widely used in social science research. Weekly laboratories employ computer graphics to investigate concepts. **100C:** Classical statistical inference, limited to simple random sampling or simple randomization designs. Characteristics of sampling distributions, bias, standard error, mathematical models, estimation, hypothesis testing. Fulfills the social science mathematics requirement. Same as Social Ecology 166A-B-C. (V)

101A-B Data Analysis I, II (4-4). Practical applications-oriented course on multiple regression. How to discover and explore general socioeconomic models in data. Prerequisites: simple probability and statistics (Social Sciences 10A-B-C strongly recommended). Same as Economics 121A-B.

101C Data Analysis-Writing (4). Advanced regression analysis. Covers practical techniques for solving model-building problems. Strong emphasis on learning clear, effective writing. Prerequisite: Social Science 101B or Economic 121B or 123B. Same as Economics 121C.

101D Introduction to Survey Analysis (4) S. Statistical analysis of survey data. Statistical report writing. Using a preexisting data base, students design and execute a statistical analysis, write a report of their findings, and present their report to the class. Corequisite: Social Sciences 100C or Social Ecology 166C. Same as Social Ecology 166D. Formerly Social Science 100D.

101E Introduction to Statistical Computing (4) W. Enables the student to utilize the analysis routines available within the Statistical Package for the Social Sciences (SPSS). Methods of data management and interpretation of computer output are presented. Prerequisites: Social Sciences 100A or Social Ecology 166A. Corequisite: Social Sciences 100B or Social Ecology 166B. Pass/Not Pass Only. Same as Social Ecology 166E. Formerly Social Science 100E.

101F Games as Models of Social Phenomena (4). Games as analogies of social, economic, and political situations. The interaction of contingency plans. Games (situations) with no winner and/or loser. Technical definition and discussion of conflict, threat, stability. Paradoxes involved in defining "rational decision." Prerequisite: one year of college-level mathematics. Same as Sociology 122. Formerly Social Sciences 154G.

101G-H Techniques of Data Collection I, II (4-4). Basic methods and theories of proximity and preference data collection including pile-sort, ranking, triads, item-by-use matrices, rating, and free-listing. Multidimensional scaling, clustering, and quadratic assignment approaches are utilized. Extensive hands-on computer use. Prerequisites: Social Sciences 10A-B-C, 100A-B-C, or consent of instructor. Same as Anthropology 172A-B.

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: consent of instructor and basic photo techniques. Formerly Social Science 180A.

184A-B Senior Seminar on Peace and Conflict, I, II (2-2) F, W. Students attend weekly seminar to discuss current global issues in conflict, cooperation, and peace. Weekly attendance at GPACS Forum also is required. Seminar utilized to analyze Forum presentations and to prepare senior research paper. **184A:** Prepare bibliography. **184B:** Prepare research proposal. Open only to seniors enrolled in the in the Global Peace and Conflict Studies minor. Same as Humanities 181A-B and Social Ecology E185A-B.

184C Senior Seminar on Peace and Conflict III (4) S. Continuation of Humanities 181A-B. Students write a senior research paper under the direction of a faculty member. Attendance at the GPACS Forum also is required. Prerequisites: Social Sciences 184A-B. Open only to seniors enrolled in the in the Global Peace and Conflict Studies minor. Same as Humanities 181C and Social Ecology E185C.

189A-Z Special Topics in Social Sciences (2 to 4). May be repeated for credit as topic varies.

197D-Z Field Study (4) F, W, S. Prerequisite: consent of instructor. May be repeated for credit.

198A-Z Group Independent Study (4) F, W, S. Prerequisite: consent of instructor. May be repeated for credit.

199 Independent Study (2-4) F, W, S. Prerequisite: consent of instructor. May be repeated for credit. Students may enroll for only one 199 each quarter.

Department of Sociology

Judith Treas, **Department Chair**

In research and teaching, the Department's faculty emphasizes empirical sociological research in such areas as small groups, organizations, sociology of work, the sociology of art, world systems analysis, gender, family, and social networks. The faculty is particularly strong in the areas of social structure and social inequality.

Sociology studies patterns of relationships among people, how behavior is shaped by these patterns of relationships, and how conflict and cooperation among groups effect social structure and social change. Sociology majors are introduced to the most important ideas, methods, and findings of sociology in the introductory sequence (Sociology 1, 2, 3), explore basic subareas of sociology in the lower-division courses, and pursue specialized study in the upper-division courses.

Information on graduate programs and courses begins on page 249.

Requirements for the Bachelor's Degree

University Requirements: See pages 50–53.

School Requirements: See page 223.

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 selected from Sociology 100–119 and one course in theory selected from Sociology 120–129.
- 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 an honors 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, 62, 63, 71, 135, 141, 144, 145, 156, 161, 164, 173.
- E. One additional upper-division Sociology course and one additional introductory course from another social science discipline.

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 selected from Sociology 100–119 and one course in theory selected from Sociology 120–129.

- 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, 62, 63, 71, 135, 141, 144, 145, 156, 161, 164, 173.

Courses in Sociology

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. Formerly Sociology 8A. (III)

2 Social Structures (4). Social structures are the patterned regularities in human interaction which are the major focus of sociological theory and research. Examination of several layers of social structure, moving from the small-scale "micro" configurations of small groups of people to the all-encompassing "macro" patterns of relationships between societies and nations. Formerly Sociology 61T. (III)

3 Introduction to Problems of Social Inequality (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, Economics 10A-B-C, Psychology 10A-B-C, Social Ecology 13, or Social Sciences 10A-B-C. Formerly Social Sciences 11A-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. Formerly Sociology 61C. (III)

24 Authority Relations (4). An analysis of the nature, ubiquity, and types of authority relations. Attention is directed at the conditions for and bases of compliance and rebellion. Authority behavior in families, schools, work groups, and politics, as well as in "deviant" subcultures such as the Mafia, are examined. Same as Political Science 62A. Formerly Sociology 61D. (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. Sociology 31/Psychology 78A and Social Ecology S86 may not both be taken for credit. Formerly Sociology 61A. (III)

39 Special Topics: Social Psychology (4). Prerequisites vary. May be repeated for credit as topic varies.

STRUCTURES

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. Same as Political Science 61A. Formerly Sociology 61G.

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. Formerly Sociology 61E.

44 Populations (4). Introduction to the analysis of human population including fertility, mortality, and migration and their effects upon age distributions, physical dispersion, sex distribution. Attention is focused on the effects of these variables on, e.g., overpopulation, social disorganization, and the stability of social institutions. Formerly Sociology 161G. (VII-B)

49 Special Topics: Structures (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIAL INSTITUTIONS AND CULTURE

53 Social Psychology of Higher Education (4). Focuses on issues and concerns unique to freshmen enrolled at a major research institution. Theoretical framework for understanding the role of higher education in today's society. The field of research and inquiry from a social/psychological perspective. Influence of critical understanding of key issues. Although priority is given to freshmen, beneficial for all students. Same as Psychology 23E. (III)

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. Formerly Sociology 62C.

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. Formerly Sociology 162G.

58 Language and Society (4). Changing sex roles have become a focus of political and social debate in our society. The use of language in sex role stereotyping has not escaped criticism. Recent sociolinguistic approaches to the expression of gender in language are scrutinized with a view to understanding how patriarchal social forms may be reflected in speech style, and how talk may be used to sexually objectify persons, reinforce sex roles, and encourage discrimination. Formerly Sociology 61I.

59 Special Topics: Social Institutions and Culture (4). Prerequisites vary. May be repeated for credit as topic varies.

AGE, GENDER, RACE, AND ETHNICITY

61 Men and Women (4). A multidimensional examination of the more or less unconscious conditioning and taken-for-granted sex role programming in contemporary American society: the social mechanisms by which it operates, the social reasons why it is formed, and the social consequences of this arrangement. Formerly Sociology 162C.

62 Introduction to Marriage and the Family (4). Sociological theories and research on marriage, kinship, intimacy, and divorce. Special 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, childrearing, and historical change. Formerly Sociology 61B. (III)

63 Race and Ethnicity (4). Compares racial and ethnic relations in the United States with those found elsewhere. Analyzes the conditions that favor either cooperation and integration or rivalry, tension, and conflict. Appraises strategies for reducing and resolving conflicts. (VII-A)

67 Women's Movement (4). Presents history of women's movement, especially in the United States since 1960. Compares different theories of the causes of the movement and examines how women and men of different social classes and ethnic background varied in their support and how the movement affected them. Formerly Sociology 61H.

69 Special Topics: Age, Gender, Race, and Ethnicity (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIETIES AND SOCIAL INEQUALITY

71 Social Problems (4). A detailed examination of the dimensions, origins, "life course," and potential solution to one or a set of related social problems. Uses case studies to provide an in-depth understanding of major issues such as poverty, inequality, racial or gender bias, drugs, crime. Formerly Sociology 61P. (III)

72 Basic Societal Issues (4). For students who have serious concern about peace, economic justice, the environment, or the future of human society generally. Attempts to provide an understanding of the fundamental issues underlying such social problems; fundamental alternatives available for attempting to cope with them. Same as Political Science 54A. Formerly Sociology 61F. (III)

74 Social Inequality (4). Theory, methods, and empirical findings of social stratification studies. Topics include whether inequality is inevitable, American social classes, public beliefs about fairness, payoffs to college education and successful parents, the feminization of poverty, the prestige of occupations.

75 Social Change (4). Comparison of various theories of social change from the classical formulations of Marx and Weber through contemporary functionalist, neo-evolutionary, political economy, and world system perspectives. Emphasis is macrosociological, focusing on processes of transformation affecting societies, nation-states, or the international system as a whole. Formerly Sociology 161A.

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. Formerly Sociology 61X. (VII-B)

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. Formerly Sociology 8B.

111 Community and Research (4). Students formulate and carry out a study on intimate relationships and interpersonal networks. Focus on family, friendship, and community, and on how people create a supportive network of relations in modern society. Prerequisite: consent of instructor. Same as Humanities 172D. Formerly Sociology 161B-C.

113 The Study of Social Phenomena (4). Examines the logic and mechanics of research on social organization. Several empirical reports are examined with respect to the processes by which their arguments are constructed. While formally independent, is useful for students interested in doing research projects in Sociology 180A-B. Formerly Sociology 162H.

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. Formerly Sociology 8C.

122 Games as Models of Social Phenomena (4). Games as analogies of social, economic, and political situations. The interaction of contingency plans. Games (situations) with no winner and/or loser. Technical definition and discussion of conflict, threat, stability. Paradoxes involved in

defining "rational decision." Prerequisite: one year of college-level mathematics. Same as Social Science 101F. Formerly Sociology 161M.

124 Sociology of Knowledge (4). How the social world helps to shape what we take for granted, what we notice, and what we believe. The creation, diffusion, and social influence of knowledge, thought forms, and symbols. The making and unmaking of ideologies. Truth and knowledge as social productions. How we give meaning to the world and to ourselves. Prerequisite: upper-division standing. Formerly Sociology 161H.

125 Introduction to Ethnomethodology (4). Examines the contemporary school of sociology known as ethnomethodology through both readings and field experiments. Focuses on how we routinely, unremarkably, massively accomplish ordinary everyday reality moment to moment through interaction. The works of Schutz, Garfinkel, Sacks, Schegloff, Heritage. Formerly Sociology 161Q.

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. Prerequisite: upper-division standing. Same as Political Science 132A. Formerly Sociology 161X.

127 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. Same as Political Science 131D. Concurrent with Social Sciences 225Z. Formerly Sociology 162Z.

129 Special Topics: Theory (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIAL STRUCTURES MODULE

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. Formerly Sociology 162R.

139 Special Topics: Social Psychology (4). Prerequisites vary. May be repeated for credit as topic varies.

STRUCTURES

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. Formerly Sociology 161E.

142 Markets and Firms (4). Compares sociological and economic approaches to organizing complex tasks and transactions. The integration of these perspectives has produced great interest in recent research on work processes and social exchange. Examples of research on integration are drawn from both industrial organization and non-commercial areas. Formerly Sociology 162E.

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. Formerly Sociology 162J.

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. Formerly Sociology 161T.

146A-B Social Interaction I, II (4-4). Examine theories of social interaction and social structure. Both micro and macro levels of analysis are used to explore the formation of social relationships and social units. Formerly Sociology 162P-Q.

149 Special Topics: Structures (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIAL INSTITUTIONS AND CULTURE

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. Formerly Sociology 162S.

153 Sociology of Science (4). Empirical studies in scientific activity, the growth of scientific communities, communication in science, and cognitive organization in science are used to explore the relationships of science, the organization of scientific communities and society. Provides an overview of the literature in the field and the direction of new research.

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. Formerly Sociology 162N.

155 Mass Communications (4). An examination of the origin, history, and functions of mass communications and its effect on social life. Formerly Sociology 161I.

156 Theories of Deviance (4). Perspectives on deviance and criminality in behavior, institution, community, and myth. The suitability of contemporary theories of deviant behavior. Same as Psychology 178D and Social Ecology J133. Formerly Sociology 161F.

157 The Study of Leisure (4). As Max Weber pointed out, the tendency of men and women everywhere to seek out "extraordinary" as opposed to "everyday" activities has a determining effect on culture and social structure. Explores some of the ways in which such activities as sport, tourism, and recreation affect population, culture, environment, and commerce. Formerly Sociology 162B.

159 Special Topics: Social Institutions and Culture (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIAL INEQUALITY MODULE

AGE, GENDER, RACE, AND ETHNICITY

161 Sociology of Gender (4). Sociological concepts of gender roles and the impact of gender on women and men. Analyzes theoretical explanations of gender roles relating theoretical and academic research to social experiences. Historical analysis of American gender roles, sexual politics, negative and positive aspects, and evaluation of current trends and future implications. Same as Humanities 172H. Formerly Sociology 162M.

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.

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. Prerequisite: upper-division standing. Same as Political Science 134J. Formerly Sociology 161R.

169 Special Topics: Age, Gender, Race, and Ethnicity (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIETIES AND SOCIAL INEQUALITY

171 Authority and Elites (4). Examines the formative experiences of political leaders and elites in authority relations, and the way these experiences influence their behavior and effectiveness as rulers. Emphasis on U.S., British, and French cases. Same as Political Science 161B. Formerly Sociology 161J.

172A-B-C Radical Societal Proposals I, II, III (4-4-4). An examination of current proposals for alternative mass media systems, political systems, and economic systems. Focus is on proposals aimed at increased citizen participation and control, and at more equal distribution of wealth. Prerequisite for 172A: Political Science 54A or Sociology 72. Prerequisite for 172B: Sociology 172A. Prerequisite for 172C: Sociology 172B. Same as Political Science 155E-F-G. Formerly Sociology 162K-L.

173 Social Stratification (4). Sources, functions, and dynamics of the unequal distribution of wealth, prestige, knowledge, and power in American and other societies. Formerly Sociology 161D.

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 163C. Formerly Sociology 161K.

175 Korean Society and Culture (4). Introductory background to the social and cultural forces that affect the lives of the Koreans, with special reference to those in the United States. Considers traditional values and contemporary issues within a historical framework. Same as Anthropology 163K. Formerly Sociology 162P.

176 Chinese Society (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 their culture. Formerly Sociology 162Y.

177 Japanese Society (4). Cultural, social, and psychological features of Japanese society. Early feudalism in Japan to deviance in modern-day Japan. Comparisons made with the United States with main focus on Japan and its complexities. Formerly Sociology 169B.

178 Sociology of Peace and War (4). Describes various commonly accepted but often erroneous notions of the causes and consequences of war and deterrence. Major theories concerning the sources of war in international and intranational social systems. The modes, techniques, and outcomes of efforts to restrict, regulate, and resolve international conflicts. Same as Humanities 172E. Formerly Sociology 161Z.

179 Special Topics: Societies and Social Inequality (4). Prerequisites vary. May be repeated for credit as topic varies.

RESEARCH AND HONORS SEQUENCE

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. Prerequisite: Sociology major or consent of instructor. Formerly Sociology 162A.

189 Special Topics: Honors Sequence (4). Prerequisites vary. May be repeated for credit as topic varies.

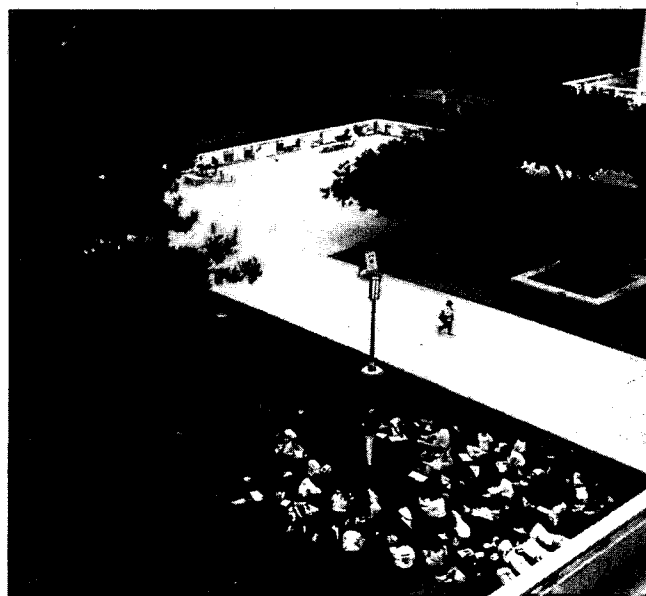
197 Field Study (4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

198 Directed Group Study (4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

199 Independent Study (4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

Graduate Programs

The School of Social Sciences offers graduate training in the following areas: Cognitive Sciences, leading to the Ph.D. in Psychology; Comparative Culture, leading to the Ph.D. in Comparative Culture; Economics, leading to the Ph.D. in Economics; Linguistics, leading to the Ph.D. in Social Science; Mathematical Behavioral Science, leading to the Ph.D. in Social Science; Politics and Society, leading to the Ph.D. in Political Science; Social Networks, leading to the Ph.D. in Social Science; and Social Relations, leading to the Ph.D. in Social Science. In addition, an interdisciplinary concentration in Public Choice is offered within the programs in Economics and Political Science, a specialized concentration in Transportation Economics is offered within the



The Social Science complex overlooks Aldrich Park, a 21-acre oasis of greenery in the center of campus.

program in Economics, 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 leading to the Ph.D. degree in Social Science.

Although the School does not admit students for a Master of Arts degree, the M.A. degree in Comparative Culture, Economics, or Social Science may be conferred upon students in progress toward the Ph.D. degree.

Admission

Potential graduate students should apply by February 1; to receive fullest consideration for financial aid, it is better to apply by January 15. Applicants should indicate the title of the degree sought (Ph.D. in Comparative Culture, 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 Research and Graduate Studies 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

Students who enter with normal academic preparation should be able to earn the Ph.D. within four to five years, or in the case of Comparative Culture, six 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.

Doctor of Philosophy in Comparative Culture

Participating Faculty

Dickson D. Bruce, Jr.: American Social and Cultural History, Southern History, Religion and Folklore, Expressive Forms of Black Culture
Peter Clecak: Social Theory, Postwar U.S. Society and Culture, American Higher Education

Raul Fernandez: Marxist Studies, Latin American and Chicano Culture, Afro-Cuban Music

James J. Flink: American Social and Cultural History, Historiography, Comparative American Cultures, Automobile History, History and Sociology of Jazz

Gilbert Gonzalez: U.S. History (Progressive Movement in Education, Education History of U.S.), Latin American History, Chicano and Latin American Cultures, Chicanos and the Educational System

Joseph G. Jorgensen: Mathematical Comparative Ethnology, Native American Language and Culture, Explanations, Theory, and Method in Social Inquiry

John M. Liu: Asian-American Culture, Immigration and Economic Structure, Labor and Social Movements, and World Systems Theory

Carlton Moss: The Media and Their Impact on Society

Dickran Tashjian: American Art and Literature, American and European Avant-Garde, Art and Technology

Joseph L. White: Black Psychology, Community Mental Health, Child Development, and Psychotherapy

The graduate program in Comparative Culture is administered by the Program in Comparative Culture. It emphasizes the interdisciplinary study of ethnocultural groups in the United States — dominant American, African-American, Asian-American, Chicano, Latino, and Native American — including their interrelationships and antecedents. The program is designed to train research scholars in American and ethnic studies. It allows students to focus on one of two major approaches to cultural analysis. Students may choose to emphasize such expressive forms of culture as literature, religion, myth, and the arts in relation to history and society. Or they may choose to concentrate on social inquiry, including social theory and the perspectives provided by such social sciences as anthropology, economics, psychology, social history, and sociology. Thus, graduate students are prepared for academic positions in interdisciplinary programs as well as in departments of English, history, and various social sciences.

Admission

The program in Comparative Culture admits new graduate students in the fall. Requirements and standards for admission are in keeping with those of the University of California as a whole. Students with a B.A. degree will be considered for admission on the basis of past academic performance and current academic interests. In addition to the general application material, the program requires test results from the verbal and quantitative sections of the Graduate Record Examination. Minorities and women are particularly encouraged to apply.

Applicants for fellowship or assistantship awards should apply by February 1 to receive fullest consideration. Application for assis-

tance based upon financial need (grants, loans, or work-study awards) is made through the UCI Financial Aid Office. Late applications will be considered for the fall quarter only if space is available — otherwise they will be deferred until a later quarter.

Residence

The University residence requirement for the Ph.D. is a minimum of six quarters.

Required and Elective Courses

The program requires 18 courses (72 units for the doctorate). Courses are selected in consultation with the program's graduate advisor so as to prepare the student for the first-year screening examination, the Ph.D. qualifying examination, and the development of a dissertation topic.

The following courses are required of students during their first and second years of graduate study:

Social Sciences 270A (Proseminar in Expressive Forms), 273A (Proseminar in Social Inquiry), 275A-B-C (Methods of Social Inquiry), 276A-B-C (Seminar in Expressive Forms of Culture), 271A-B-C (Colloquium on Dominant American Culture), 274A-B (Colloquium on Afro-American Culture), 274C-D (Colloquium on Asian-American Cultures), and 274G-H (Colloquium on Native American Cultures). Additionally, students take two four-unit elective courses upon advisement during their first and second years of graduate study.

During the third year, students normally take elective courses and/or directed reading courses upon advisement in preparation for the Ph.D. qualifying examinations.

All graduate students, including Teaching Assistants and Associates, are expected to enroll for a minimum of 12 units of academic credit (ordinarily, three courses) each quarter. Any student who wishes to take more than four courses (16 units) must petition the Graduate Committee and gain the approval of the Dean of Graduate Studies.

Incomplete grades will not be assigned for year-long courses except under extenuating circumstances.

Credit for Previous Academic Work

Students entering with an M.A. degree may request credit for a maximum of nine courses. These courses normally are to be used in lieu of electives. A written petition requesting acceptance of previous work in lieu of electives must be made to the Graduate Advisor. Approval of the Dean of Graduate Studies also is required.

Language Requirements

Two foreign languages or one foreign language and statistics are required. The language will be determined by the student in consultation with the Graduate Advisor. The language requirement must be satisfied either through a standard Educational Testing Service examination or by another method approved by the Graduate Advisor. The statistics requirement can be satisfied by taking three quarters of course work in social science statistics chosen in consultation with the Graduate Advisor. The language and/or the statistics requirements must be satisfied before the Ph.D. qualifying examination can be taken.

Comprehensive First-Year Examination

Two weeks after final examinations in the spring quarter, first-year students are administered a comprehensive examination based upon materials from their course work. The examination is administered by the program's graduate advisor. Normally the examination consists of four sections, corresponding to the required courses offered that year. Students are notified of the results within 10 working days of the examination.

A student must pass all sections of the comprehensive examination in order to continue graduate study. A student who fails the examination has the option of retaking those failed sections once prior to the beginning of the fall quarter. The results of the second examination will be final.

The Ph.D. Qualifying Examination

The Ph.D. qualifying examination must be taken by the end of the third year, after the completion of 84 units of course work, the language examination, and/or the language and statistics requirement.

Doctoral students are administered two examinations, one written and one oral, which are based upon the written examination.

The student's Ph.D. advisory committee is comprised of four members of the Irvine Division of the Academic Senate or of persons with equivalent qualifications, and is formed by the Graduate Advisor in consultation with the student and Comparative Culture faculty. The chair of the advisory committee and at least two other members of the examining committee must be Comparative Culture faculty. The committee administers the subsequent oral examination and guides the student's dissertation project. The committee is responsible for formulating the examination questions, though the entire Comparative Culture faculty may submit questions for the examination.

The written examination is based upon program courses and electives taken by the student in satisfaction of graduate course work. The written examination consists of four parts: nondominant cultures and classes, dominant American culture, cultural theory and method, and an area of specialization, perhaps including but not limited to the student's dissertation project. The fourth area is formulated by the student in close consultation with the examining committee. The written examination is administered over two days, each section requiring three hours of writing.

Students who fail the written examination may petition to take the failed portions a second time. Two failures culminate in expulsion from the program.

Upon successful completion of the written examination, the student may advance to the oral examination, which is given no more than two weeks later. The oral examination is conducted by a candidacy committee appointed in the name of the Graduate Council. This committee normally consists of the four members of the written examination committee, plus a fifth member who does not hold a faculty appointment in Comparative Culture. This committee recommends advancement to candidacy for the Ph.D. if the examination is successful.

The Dissertation

The student must present a written statement of a dissertation project to the dissertation committee, which must approve the proposal. This statement must be presented within a year of successful completion of the qualifying examinations. The dissertation itself normally should be successfully completed within three years after the qualifying examinations.

The dissertation committee is appointed by the Dean of Graduate Studies on behalf of the Graduate Council upon the recommendation of the program graduate advisor after consultation with the student.

Master of Arts in Comparative Culture

Those doctoral students who pass the first-year comprehensive examination but do not continue beyond that point, or those who have passed the Ph.D. Qualifying Examination, may be awarded the Master of Arts degree by (a) completing 36 units (nine courses), 24 units (six courses) of which must be in Comparative Culture and 12 units (three courses) of which are approved electives

in Comparative Culture or a related area; and (b) demonstrating proficiency in a language or an alternate skill.

Additional Information

Normal Progress. Normal progress is defined as earning B grades or better in all required courses, maintaining a B average in all course work, satisfactory performance on a first-year screening examination, satisfactory performance on the Ph.D. qualifying examination taken by the end of the third year, and satisfactory completion of the doctoral dissertation by the end of the sixth year. A grade of incomplete in any course must be replaced by a satisfactory grade within three quarters of its incurrence. Grades of incomplete will not be given for three-quarter or two-quarter course sequences except under extenuating circumstances. In Progress grades can be awarded for the first term of a two-quarter course and for the first and second terms of a three-quarter course.

To be eligible for a teaching assistantship a student can have no more than one incomplete within the last three quarters and must carry a minimum of twelve units per quarter with satisfactory grades for the last three quarters.

All incompletes must be resolved before the Ph.D. qualifying examination can be taken.

Leaves of Absence. A Student must formally petition the Graduate Advisor for a leave of absence from graduate study. Such leaves normally will be granted for medical or financial reasons. Students are entitled to no more than three quarters of leave during their tenure in the graduate program.

Doctor of Philosophy in Economics

Participating Faculty

Duran Bell: Models of Social Processes
David Brownstone: Econometrics
Linda R. Cohen: Political Economy, Social Choice, Government Regulation and Government Policy toward Research and Development
Arthur S. DeVany: Economic Theory, Industrial Organizations
Gordon J. Fielding: Urban Theory and Transportation Policy
Amihai Glazer: Public Choice, Industrial Organization
Cheng Hsiao: Econometrics
John Johnston: Econometrics
Sheen T. Kassouf: The Theory of Stochastic Speculative Pricing
Daniel Klein: Public Economics, Game Theory
Charles A. Lave: Transportation Economics
H. Hiro Lee: Economic Development, International Economics
David M. Lilien: Macroeconomics, Labor Economics and Applied Econometrics
Julius Margolis: Political Economy of National Defense and Government Behavior
Giovanna Mossetti: Macroeconomics and Monetary Theory
Stergios Skaperdas: Economic Theory, Game Theory
Kenneth Small: Urban Economics, Transportation Economics, Discrete-Choice Econometrics, Energy
Robert Valletta: Labor Economics, Industrial Relations, Applied Microeconomics

Affiliated Faculty

Dennis Aigner: Statistical and Econometric Methodology, Efficiency Estimation
Michael L. Burton: Cognitive Anthropology, Economic Anthropology, Ecological Anthropology, Gender
Frank Cancian: Anthropology, Social Stratification, Economic Anthropology, Agriculture, Mexico
Robert A. Connolly: Financial Economics and Applied Econometrics
Paul Feldstein: Health Economics
Bernard Grofman: Public Choice, Law and Economics, Models of Collective Decision Making
Carole Uhlaner: Comparative Political Participation, Formal Models of Political Behavior

The graduate program in Economics is administered by the Department of Economics. Drawing upon the School's strong quantitative tradition, it specializes in econometric techniques applied to government behavior, labor economics, transportation economics, and urban economics. 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 UCI graduate program in economics highly attractive because of its small size and its great flexibility. Self-discipline and an inquiring mind are prerequisites.

Requirements

All students must show competence in microeconomic theory, macroeconomics, and econometrics. Normally this is done by taking a three-course sequence in each of these areas. 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. 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 on in their graduate careers, in order to facilitate a timely transition from meeting course and field requirements to thinking through a dissertation research plan. Knowledge of one foreign language is required; a computer language may be substituted at the discretion of the faculty. After meeting the above requirements, the student will be advanced to candidacy upon completion of an oral examination on a written dissertation proposal.

Concentration in Transportation Economics

Students can also be awarded a Ph.D. in Economics with a concentration in Transportation Economics. This option draws upon the unusual collection of transportation researchers on the campus, both within the School of Social Sciences, the School of Engineering, the Graduate School of Management, and the Program in Social Ecology. Students benefit from association with the Institute of Transportation Studies, a systemwide research unit headquartered at UCI. It 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 microeconomic and macroeconomic theory, students may substitute specified courses such as Discrete Econometrics (Social Sciences 213G), Advanced Travel Demand Analysis (Engineering CE220A), 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 cognate 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 earn 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 sophisticated quantitative tools to model the functioning of political institutions. Faculty from the Departments of Economics,

Politics and Society, and Philosophy and from the Graduate School of Management are involved in research that supports the concentration through the Focused Research Program in Public Choice.

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, which is jointly organized by faculty in the Department of Economics and the Department of Politics and Society. (A background in economic theory equivalent to Economics H100A-B-C, Honors Intermediate 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 and has an excellent library with a collection of more than 1.4 million volumes, as well as special interlibrary loan arrangements with other University of California libraries. The School of Social Sciences provides a computer laboratory and a small economics library. The Economics Department has a small library with current journals and unpublished working papers from other universities. Students also have access to several campus computers including a Convex C240 mini-super computer. Two Organized Research Units, the Institute of Transportation Studies, and the Public Policy Research Organization, the Focused Research Program in Public Choice, and the Irvine Research Unit in Mathematical Behavioral Sciences provide research opportunities for graduate students.

Admission

The deadline for application for admission is February 1 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. Foreign applicants must also submit Test of English as a Foreign Language (TOEFL) scores.

Doctor of Philosophy in Political Science

Participating Faculty

Michel Crozier: Organizational Sociology, Public Administration
 Russell Dalton: West European Politics, Mass Political Behavior
 James Danziger: Urban Political Systems, Public Policy Analysis, and Technology and Politics
 David Easton: Political Systems, Political Structures
 Harry Eckstein: Macropolitics and Authority Relations
 Creel Froman: Human Analysis
 Bernard Grofman: Mathematical Models of Collective Decision Making, Formal Democratic Theory, Sequential Decision Making, and Politics of Small Groups
 Sung-Chull Lee: Mathematical Modeling in Social Sciences, Conflict Resolution, and East Asian Politics
 Julius Margolis: Economic Analysis of Government Behavior
 Kristen R. Monroe: Political Economy, Rationality, American Politics, Methodology
 Jack W. Peltason: American Government, American Institutions, the Judicial Process
 Mark P. Petracca: American Political Institutions (Presidency and Congress), Interest Organizations, Public Policy, Power and Political Discourse
 M. Ross Quillian: Mass Communication, Participatory Forms of Social Organization, Sociological Theory, Sociology of Science, and Artificial Intelligence

Shawn Rosenberg: Political Psychology, Cognitive Psychology, Public Opinion

William Schonfeld: Authority, Democratic Theory, and Comparative Politics

Caesar Sereseres: U.S. Foreign Policy, U.S.-Latin American Relations, Mexican-American Politics

Etel Solingen: International Relations Theory, International Political Economy, and World Politics

Dorothy J. Solinger: Chinese Domestic Politics and Political Economy, Comparative Politics, History of Political Philosophy

Rein Taagepera: Mathematical Models and Quantitative Analysis of Elections, Inequality, Arms Races, Growth-Decline Phenomena and Soviet Baltic Area Studies

Carole Uhlaner: Comparative Political Participation, Formal Models of Political Behavior

Martin Wattenberg: American Political Behavior and Institutions

The graduate program in Political Science is administered by the Department of Politics and Society. It emphasizes empirical democratic theory, with an emphasis on the United States and other industrialized and industrializing nations, within a comparative context. Faculty interests include political behavior, political psychology, public choice theory, political economy, international relations, systems theory, mass media, and authority relations. Institutions of interest include the executive branch, bureaucratic politics, political parties, and representation and electoral systems. The strengths of the Political Science graduate program include its small size, its personalized attention to students, and its location within an interdisciplinary school. Special emphasis is placed on recruiting students whose interests overlap with those of faculty.

Two Organized Research Units, the Institute of Transportation Studies and the Public Policy Research Organization, and one Irvine Research Unit, the Institute for Mathematical Behavioral Sciences, offer opportunities for participation in ongoing faculty research. One group of Political Science faculty share interests in applied Public Choice with faculty members in both economics and philosophy; another group is involved with the program in Global Peace and Conflict Studies; and others are involved with the study of East Asia. Another subset of faculty, together with distinguished visitors from leading European universities, is involved with the study of parties and elections in industrialized nations; while another group of faculty studies the impacts of the media and of information technology on politics.

Admissions

The deadline for application for fall quarter admission is February 1; earlier applications are encouraged. 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. 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 Politics and Society 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 suc-

cessful completion of these papers and demonstration of competence in mathematics and a foreign language, 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, supervises work toward completion of the dissertation.

Concentration in Public Choice

Students may also earn a Ph.D. degree in Political Science with a concentration in Public Choice. This 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. Faculty from the Departments of Politics and Society, Economics, and Philosophy and from the Graduate School of Management are involved in research that supports the concentration through the Focused Research Program in Public Choice.

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 core sequence in Public Choice, which is jointly organized by faculty in the Department of Politics and Society and the Department of Economics. (A background in economic theory equivalent to Economics H100A-B-C, Honors Intermediate Economic Theory, is a prerequisite to this sequence); (2) students must complete three courses out of a set designated by the interdisciplinary committee, such as American Political Institutions, Comparative Political Parties and Electoral Systems, and Theory of Political Coalitions; (3) students are encouraged to take graduate-level econometrics; and (4) students are expected to write their dissertation on a topic related to Public Choice.

Concentration in Political Psychology

Students may also earn a Ph.D. degree in Political Science with a concentration in Political Psychology. This is an interdisciplinary field which unites the concerns of political science and psychology. As such, it offers the dual advantages of advancing the study of various forms of political behavior by drawing on psychological theory and research, and advancing psychological inquiry by forcing a greater recognition of the institutional and cultural determinants of people's actions and of the political-philosophical bases of psychological theorizing. The Department of Politics and Society has responsibility for administering the concentration; participating faculty come also from the Department of Cognitive Science, the School of Medicine, and the Program in Social Ecology.

Students who elect this concentration are admitted into the Political Science graduate program according to normal procedures and are expected to satisfy all of the regular Political Science degree requirements. Special requirements associated with the concentration are as follows: (1) a two-quarter course on Political Psychology; (2) three graduate psychology courses chosen from a specified list, including, for example, such courses as Personality and Psychopathology, Introduction to Cognitive Psychology, Social Cognition, Developmental Psychology; and (3) a dissertation topic related to Political Psychology.

Doctor of Philosophy in Psychology

Participating Faculty

William Batchelder: Mathematical Models of Learning and Memory, Mathematical Psychology, and Measurement
 Isabel Birnbaum: Human Memory and Alcohol
 Myron Braunstein: Visual Perception and Computer Applications
 Michael Butler: How People Learn and How They Can Learn Better
 Carol M. Cicerone: Visual Perception and the Physiological Bases of Visual Perception, with Emphasis on Human Color Vision and Retinal Mechanisms of Sensitivity Regulation
 Tom N. Cornsweet: Visual Psychophysics, Visual Psychophysiology, and Electro-optical Instrumentation
 Michael D'Zmura: Visual Perception, Color Vision, Attention and Image Understanding
 Jean-Claude Falmagne: Mathematical Behavioral Sciences
 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
 Tarow Indow: Mathematical Models in Visual Space, Color Space, and Human Memory
 Geoffrey J. Iverson: Cognitive Science and Mathematical Models
 Mary-Louise Kean: Linguistic Theory and Biological Foundations of Higher Mental Processes
 David LaBerge: Attention, Mathematical Models of Response Time, Brain Imaging
 Barbara Landau: Spatial Knowledge and Language Learning
 R. Duncan Luce: Mathematical Behavioral Science; Measurement Theory, Utility Theory, Response Times
 Virginia Mann: Speech Perception and Its Development, the Development of Reading Ability, Development of Dyslexia
 Louis Narens: Measurement, Logic, and Metacognition
 W.C. Watt: Cognitive Semiotics
 John I. Yellott, Jr.: Mathematical Psychology and Visual Perception

The graduate program in Psychology is administered by the Department of Cognitive Sciences, which has faculty interested in human cognition, perception, cognitive psychology, and psycholinguistics. The faculty lay special stress on precise scientific approaches to issues in human cognition, and view formal models as instrumental in understanding the nature of the human mind.

Research interests include: mathematical psychology, perception (visual and auditory), cognitive development, problem solving, artificial intelligence, learning, memory, psycholinguistics, semantics, and theoretical linguistics. The graduate program does not emphasize traditional training in psychology; rather, it stresses the integration of research in the areas mentioned above, and in related areas, into a discipline whose central focus is the study of human knowledge and human information processing, regardless of the medium in which it is expressed.

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 courses in some of the following fields are considered highly desirable: computer science, mathematics and the physical sciences, biology, logic, and linguistics. Each admission application will be considered on its own merits.

Requirements

Each student is expected to take two three-course graduate sequences. The first is a three-quarter methods sequence covering the areas of probability, statistics, and experimental design (Social Sciences 241A, 241B, 241C). The other is a proseminar sequence covering areas such as learning, memory, perception, and linguistics (Social Sciences 242A-B-C). Suitable substitutes may be made with written approval of the Department's Director of Graduate Studies. Additional advanced course work in other fields relevant to the student's interests will supplement the required courses. Knowledge of one foreign language appropriate to the

student's research concerns is required. Students are expected to enroll in the Cognitive Sciences Research Seminar (Social Sciences 240A-B-C) during all quarters in residence prior to advancement to candidacy.

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 relevant journal. The student's advisor is responsible for assisting in the planning and other facets of the project. Students are expected to write a paper based on their research and to present a talk to the "Cognitive Sciences Seminar" or another appropriate forum by the end of the spring quarter of their second full year in the graduate program.

Reviews

At the end of each academic year the faculty of the Department will meet to discuss the progress of each of its students and to provide feedback on the progress and perceived deficiencies of each student.

The advancement-to-candidacy examination will consist of an oral examination and, at the faculty's option, a written examination as well. Normally this step will be completed by the end of the third or beginning of the fourth year of the program. The examination will be based on the student's dissertation proposal.

Prior to submission of the final version of the dissertation the student will be expected to defend the dissertation in a public colloquium.

Doctor of Philosophy in Social Science

The graduate program in Social Science comprises four concentrations: Linguistics, Mathematical Behavioral Science, Social Networks, and Social Relations. Each is administered by a different group of faculty.

Concentration in Linguistics

Participating Faculty

Naoki Fukui: Syntactic Theory, East Asian Linguistics
 C. T. James Huang: Syntactic Theory, East Asian Linguistics
 Mary-Louise Kean: Biological Foundations of Language
 Barbara Landau: Development of Language
 Virginia A. Mann: Speech Perception and Psycholinguistics
 Robert May: Theoretical Linguistics, Syntax, Semantics of Natural Language
 Terence Parsons: Semantics
 Louis Narens: Formal and Computational Models of Language and Cognition
 Bernard Tranel: Phonological Theory
 W.C. Watt: Cognitive Semiotics

The doctoral concentration in Linguistics, administered by a group of faculty specializing in the field, is focused on theoretical linguistics and its role in the cognitive sciences. The research emphasis is directed towards the core areas of theoretical work in syntax, semantics, phonology, and psycholinguistics with a concentration on the formal analysis of natural language. Additional emphasis is on the study of a broad range of languages and language families, including East Asian and Romance. Students are further expected to gain expertise in other areas of the cognitive sciences, especially as this pertains to the study of language.

Admission

While at least some undergraduate training in theoretical linguistics is desirable, applications are also welcomed from students with an interest in linguistics, but with backgrounds in other areas, e.g., philosophy, psychology, language studies, computer science. Decisions on admissions are based on students' undergraduate performance, letters of recommendation, statement of

purpose, and any written research materials submitted by the candidate. Applicants must submit Graduate Record Examination (GRE) scores; applicants from non-English speaking nations must also submit Test of English as a Foreign Language (TOEFL) scores.

Requirements

Students are assigned an advisor until advanced to candidacy, at which time a committee is formed consisting of three professors, one of whom is designated as Chair. This committee and the student work out a plan of course work and research, commensurate with fulfilling all necessary requirements.

Course requirements consist of seven core courses and eight supplementary courses, covering class work and research seminars in phonology, syntax, semantics, psycholinguistics, cognitive sciences, and related areas. A critical literature survey of an area outside of, but related to, linguistics is to be written under the guidance of an appropriate faculty member. Two papers of publishable quality are also required in two of the following areas: phonology, morphology, syntax, semantics, and psycholinguistics. Evaluation of these papers will be included in the examination for advancement to candidacy.

Students are required to demonstrate mastery of a foreign language on the basis of a written examination. The quantitative methods requirement is fulfilled by a course on symbolic logic or formal language theory (one of the supplementary courses).

Students are expected to attend Linguistics colloquia and must give a colloquium presenting original research during their third year.

Concentration in Mathematical Behavioral Sciences

Participating Faculty

William Batchelder: Mathematical Models, Measurement, and Cognitive Processes
 John P. Boyd: Mathematical Anthropology and Systems Theory
 David Brownstone: Econometrics and Industrial Organization
 Arthur S. DeVany: Theory of Markets, Transportation, Labor Economics, Industrial Organizations
 Michael D'Zmura: Vision Research
 Jean-Claude Falmagne: Mathematical Psychology
 Linton C. Freeman: Network Models of Social Structure
 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
 Tarow Indow: Mathematical Models in Visual Space, Color Space, and Human Memory
 Geoffrey Iverson: Cognitive Science and Mathematical Models
 David LaBerge: Attention, Pattern Identification and Language Processing
 Alain A. Lewis: Applications of Mathematics, Logic in the Social Sciences
 R. Duncan Luce: Mathematical Behavioral Science
 Louis Narens: Measurement, Logic, and Metacognition
 Robert Newcomb: Statistical and Research Methods for the Social Sciences
 A. Kimball Romney: Experimental and Psychological Anthropology
 Stergios Skaperdas: Economic Theory, Monetary Theory
 Christian Werner: Mathematical Geography
 John I. Yellott: Mathematical Psychology and Vision Perception

The concentration in Mathematical Behavioral Science offers a program of interdisciplinary and mathematical approaches to the study of human behavior, providing high levels of training in current mathematical modeling and mathematical skills. The program is administered by an interdisciplinary group of faculty.

Admission

Admission to the program requires evidence of appreciable mathematical skill and knowledge. As an absolute minimum, a candidate should have taken one full year of calculus, including calcu-

lus of several variables, and one course in linear algebra. In addition, candidates must provide evidence of additional mathematical depth of knowledge, which 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 in the GRE Mathematics Subject Test, 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.

Requirements

Four major classes of requirements must be fulfilled. Since a number of options are available, the student will, in consultation with an advisor, submit a plan of study to the Graduate Committee of the program.

Language and Quantitative/Mathematical. Students must attain proficiency in reading social science publications in one foreign language. (A higher level of proficiency may be required if warranted by the nature of the student's research plans.)

The quantitative methods requirement consists of completing, by the end of the third year, the following courses: (1) one 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.

Substantive Minor. Students are expected to develop considerable expertise in some substantive field of social science 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.

Computer. Students must be sufficiently familiar with various 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.

Research Papers and Colloquia. A research paper reporting original research or a penetrating analysis of some subtopic of mathematical behavioral science is expected at the end of the second year. An oral presentation will be given to faculty and graduate students. Students also are expected to regularly attend the Colloquium in Mathematical Behavioral Science.

Master of Arts Degree

The M.A. degree is awarded only to Ph.D. students who complete necessary requirements; students are not admitted for graduate study leading only to the Master's degree. 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 Sciences courses, normally including the core requirement in mathematical statistics.

Concentration in Social Networks

Participating Faculty

William Batchelder: Mathematical Models, Measurement, and Cognitive Processes
 James S. Boster: Cognitive Anthropology, Social Networks, Study of Intracultural Variation, Ethnopsychology, Ethnobiology
 John P. Boyd: Mathematical Anthropology and Systems Theory
 Linton Freeman: Network Models of Social Structure
 Samuel L. Gilmore: Sociology of Culture, Sociology of Art and Science, Complex Organizations and Work
 R. Duncan Luce: Mathematical Behavioral Science
 A. Kimball Romney: Experimental and Psychological Anthropology
 David A. Smith: Urbanization, Comparative/Historical Sociology, Political Sociology, World-System Analysis
 Christian Werner: Mathematical Social Science

Douglas R. White: Anthropology, Social Networks and Relations, Cross-Cultural Comparison, Mathematical Models of Social Constraints, Decision-Making Networks, and Social Processes

The Departments of Anthropology and Sociology jointly offer a concentration in Social Networks that focuses on the patterns or forms of relations that link persons or other social actors together in coherent wholes. Thus, Social Networks stresses the *structural* interests of several disciplines including sociology, anthropology, and cognitive science. It is concerned with problems of representing such structures, both statically and dynamically, and with exploring the implications of structural form for individual and collective behavior. In addition, the networks perspective has important applications in the study of international relations, organizational behavior, health and mental health, and human communications research.

Admission

The graduate concentration in Social Networks seeks qualified graduate students who are well-trained in either (a) a structural approach in some traditional social science discipline or (b) mathematics. Students also should be willing to learn either a set of social science orientations and models or the appropriate mathematical skills to do research in social networks, depending upon their prior training.

Requirements

Students are encouraged to develop their own research foci and specializations within the general social networks perspective. All students are expected to become acquainted with the general perspective and to develop a minimum set of formal and methodological skills.

A set of core courses has been developed that is aimed at acquainting incoming students with theoretical, mathematical, and methodological tools for the study of social networks. The courses are Social Sciences 201G (Analysis of Relational Data), 281A (Network Theories of Social Structure), and 283A (Interaction Models). These courses, or equivalent training, are required of all graduate students. In addition, students are required to complete one year of training (or demonstrate equivalence) in mathematics, statistics, and research methodology. Selection of other courses will be by agreement between student and advisor. In addition to relevant courses offered throughout the School, courses specifically tailored for students in Social Networks are offered by faculty on a regular basis.

Students must demonstrate proficiency in reading social science publications in one foreign language or demonstrate a higher level of proficiency if required by the nature of the student's research plans.

Reviews and Examinations

Students enrolled in the concentration are expected to meet the requirements of UCI and the School as well as those of the concentration. In addition, each student is reviewed three times to ascertain progress.

The first review is of the student's first-year performance. The review results in a faculty-student conference in which a recommendation is made for continuation or withdrawal.

The second review is the oral examination for the student's qualification for advancement to candidacy. It is designed to assess the likelihood of the student successfully completing the Ph.D. dissertation and is based on the student's dissertation research proposal as well as on the progress in course work. Students are expected to complete this examination on or before the end of their third year of residence.

The third review is a dissertation defense. The defense will be in the form of a public colloquium presentation. The faculty may

recommend revisions, after which the dissertation may be submitted for the doctoral degree in Social Science.

Concentration in Social Relations

Participating Faculty

Duran Bell: Models of Social Relations, Economic Anthropology
James S. Boster: Cognitive Anthropology, Social Networks, Study of Intracultural Variation, Ethnopsychology, Ethnobiology
Michael L. Burton: Cognitive Anthropology, Economic Anthropology, Ecological Anthropology, Gender, Research Methods
Francesca M. Cancian: Gender, Sociology of the Family, Peace and War
Frank Cancian: Social Stratification, Economic Anthropology, Mexico
Leo R. Chavez: International Migration, Urban Anthropology, Medical Anthropology, Public Policy, Latin American Anthropology
Benjamin N. Colby: Empirical Anthropology, Cognitive Science, Psychology and Personality, Behavioral Medicine, Culture Theory, Evolution, Social Pathology
James Ferguson: Political Anthropology, Economic Anthropology, Systems of Thought and Discourse
Linton Freeman: Network Models of Social Structure
Robert Garfias: Expressive Culture, Ethnomusicology, Politics and the Arts, Japan, Burma
Linda Garro: Medical Anthropology, Cognitive Anthropology
Samuel L. Gilmore: Sociology of Culture, Sociology of Art and Science, Complex Organizations and Work
Jerome Kirk: Comparative Sociology, Urban Anthropology, Research Methods
Karen Leonard: Anthropology and Social History, Society, Caste, and Family in India, Comparative Family History, Asian-American History
Craig MacAndrew: Social Psychology, Personality Theory, Alcohol/Substance Abuse
Duane Metzger: Cognitive Anthropology, Belief Systems and Semantic Analysis
A. Kimball Romney: Cognitive Anthropology, Social Networks, Mathematical Social Science
Arthur Rubel: Medical Anthropology, Peasant Social Organizations, Social Stress Analysis
David A. Smith: Urbanization, Comparative Historical Sociology, Political Sociology, World-System Analysis
Judith Stepan-Norris: Sociology of Work, Political Sociology, Historical and Comparative Sociology, American Society
Judith Treas: Population Studies, Sociology of Aging, Social Stratification, Sociology of Family
Douglas R. White: Cross-Cultural Research, Mathematical Anthropology, Social Networks

Faculty with Related Interests

Mark Baldassare: Urban Sociology, Public Opinion Research
Jonathon E. Ericson: Archaeological Sciences, Prehistoric Ecology, Exchange, Social Organization and Dietary Reconstruction
Howard B. Waitzkin: Comparative Health Care Systems, Primary Care and Community Medicine, Doctor-Patient Communication

The graduate concentration in Social Relations is administered jointly by the Departments of Anthropology and Sociology. It centers on interdisciplinary research in social science, particularly where the traditional concerns of sociology and anthropology converge. Because of a low student-to-faculty ratio, each student works closely with a faculty committee to develop an individualized course of study. Students may work on a broad range of topics, including cognitive anthropology, the sociology of culture, culture and health practices, family and gender, Third World development and social change, and social structure and networks.

Admission

The faculty welcomes students from diverse educational and social backgrounds. Students who have research interests corresponding to those of specific faculty members are especially encouraged to apply to this apprenticeship-type program.

Requirements

Each new student is assigned an advisor who serves until a three-person committee is formed. The committee oversees the student's academic work and ordinarily is chaired by the faculty member with whom the student plans to work most closely.

A core seminar which meets one quarter in the first year and two quarters in the second year is required. Additionally, three basic courses in particular substantive areas of anthropology and sociology are offered each year as core courses. In each of their first two years, students must take two of these three focused seminars. Two quarters of statistics are required; one quarter must be taken in the first year. In addition, two quarters of research design or data collection methods are required; one quarter must be taken in the first year. Students also take additional seminars pertinent to their own research interests.

Course work usually takes two years, during which time students choose an area of concentration. By the end of the third year, students are expected to have selected a faculty committee and to have made plans for their doctoral dissertation research. All students are expected to continue to participate in both the Social Relations Colloquium Series and in less formal aspects of intellectual life in the program.

During the second year each student will prepare an original paper, which will be presented by the student at a meeting during the spring quarter. The group will provide the student with a detailed written critique of the paper as part of the second-year evaluation of the student's overall progress.

The advancement-to-candidacy examination should ordinarily be taken no later than the spring quarter of the student's third year.

A speaking or reading knowledge of one foreign language is required.

Graduate Courses

201A Descriptive Multivariate Statistics I (4). Mathematical tools to organize and illuminate the multivariate methods. Multiple regression analysis, multi-dimensional scaling, and cluster analysis. Statistical computing via MDS(x), DMDP, and SPSS. Students must enroll in the laboratory section which meets on Wednesdays. Prerequisite: Social Sciences 100A-B-C or equivalent. Same as Social Ecology 290A and Management 290X.

201B Descriptive Multivariate Statistics II (4). Presentation of the principal methods of multivariate statistics including criteria for appropriate use and the interpretation of resulting measurements. Computer exercises are used to demonstrate concepts. Prerequisite: Social Sciences 201A, Social Ecology 290A, or Management 290X. Same as Social Ecology 290B and Management 290Y.

201C Sampling Techniques and Estimation Methods (4). A review of confidence interval estimates derived from simple random samples is followed by a representation of techniques for improving the precision of such estimates under the constraints of feasibility, cost, and time. Methods for dealing with bias and nonsampling errors are also considered. Outside speakers. Prerequisites: Social Sciences 100A-B-C or equivalent. Same as Social Ecology 290C and Management 290Z. Satisfactory/Unsatisfactory Only.

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.

201G Analysis of Relational Data (4). A practicum in social networks data analysis focusing on the special problems raised by data sets that embody relations. Log-linear and quadratic assignment procedures are stressed along with multidimensional scaling and other representational models.

201J Statistical Methods in Network Analysis (4). A practicum on network approaches to a classic topic in data analysis: the rectangular table or multivariate analysis. Programs on microcomputers are utilized. Students implement data-analytic studies using one or more of the methods. Prerequisite: graduate standing or consent of instructor.

201L Mathematical Tools for Network Analysis (4). A broad introduction to selected topics in algebra and discrete combinatorics with special emphasis on semigroups and graph theory. Acquaints students with the mathematical tools used in social networks analysis.

204A Algebraic Theories in the Social Sciences (4). Various applications of abstract algebra to the social sciences. The unifying mathematical framework is categorical algebra, including such basic ideas as category, functor, natural transformations, and universality. Examples drawn from, e.g., pattern recognition (group theory), formal languages and social relations (semigroups), and the general problems of inducing structure from behavior data. Requires some mathematical maturity, but no specific knowledge. Prerequisite: graduate standing or consent of instructor.

204D-E Von Neumann Games I, II (4-4). A substantive introduction to the mathematical theory of finite N-person von Neumann games. Games in extensive form, normal form, and characteristic form. Emphasis on developing various types of solution concepts for each of the three forms of games. Prerequisite: graduate standing or consent of instructor.

205C Alcohol and Behavior (4). Focuses on the effects of alcohol on behavior, with emphasis on memory and cognitive processes. Primary attention is given to research results and research potential. What studies have been done and what studies need to be done? Each student selects one area to review. Previous familiarity with the topic is not required. Prerequisite: graduate standing or consent of instructor.

208A-B Workshop on Dissertation Writing I, II (4-4). Conception, organization, and style. 208B focuses on individual writing.

209A-Z Special Topics in Mathematical Social Science (4). Current research in Mathematical Social Science. Topics vary.

210A-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.

211A 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.

212A-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.

213A Mathematical Statistics for Economists (4). Mathematical statistics necessary to prepare students for econometric study and applied work. Topics include probability theory, distributions, sampling, parametric interval and point estimation, statistical hypothesis testing, and nonparametric tests. Prerequisite: graduate standing or consent of instructor.

213B-C Econometrics I, II (4-4). Specification, estimation, and testing of econometric models. Main emphasis on linear simultaneous equations models. Time series, nonlinear models, and limited dependent variable models are covered. Prerequisite: Social Sciences 213A or equivalent.

213D-E Econometrics Laboratory (2-2). Discussion of problems in econometrics and their relationship to econometric theory. Instruction in the use of computers for applied econometric work. Prerequisite: concurrent enrollment in Social Sciences 213B-C.

213G Discrete Choice Econometrics (4). Specification, estimation, and testing of discrete choice models, with emphasis on cross-section application. Qualitative choice, limited dependent variables, sample selection bias, and latent variables. Students use computer packages to apply models to real data. Prerequisites: Social Sciences 213A and 213B.

213H 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: Social Sciences 213A, 213B-C.

214A-B Labor Economics I, II (4-4). Analytic and empirical study of labor markets. Topics include labor supply and demand, human capital, educational sorting, life-time earnings profiles, discrimination, unemployment, unions; several econometric techniques including combined time-series and cross-sections, sample selection bias, and switching regressions are taught as needed. Prerequisites: Economics 100B and Social Sciences 211A or equivalent.

214C-D 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. **214C:** Oligopoly, cartels, mergers, vertical integration, patents, innovation, antitrust, and regulation; **214D:** price flexibility and dispersion, auctions, search and industrial structure, intrafirm organization. Prerequisites: Economics 100B and Social Sciences 211A, or equivalent.

214E Urban Economics I (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. Prerequisites: Economics 100B and Social Sciences 211B, or equivalent.

214G Transportation Economics (4). Economic analysis of intercity transportation. Cost measurement, applications of pricing principles, project evaluation, and economic regulation. Policy toward railroads, air passenger transport, and intercity highways. Prerequisites: Economics 100B and Social Sciences 211A, or equivalent.

214H Economics of Urban Transportation (4). A sequel to Social Sciences 214E and 214G. Travel demand analysis including discussion of econometric techniques. Pricing and investment in urban transportation, effects of transportation on urban structure, selected policy issues. Prerequisite: Social Sciences 214E or 214G.

214J Information Economics (4). Study of information as an economic resource, focusing on principles which govern the production, distribution, and value of information. Impact of information structures on individual decision, corporate structure, and the operation of markets. Prerequisites: Economics 100A-B-C and Social Sciences 211A, or equivalent.

214L Financial Economics (4). The modern theory of portfolio selection as an application of individual decision making under uncertainty. Implication for equilibrium financial asset pricing. Prerequisites: Economics 100A-B and Social Sciences 211A or equivalent, and Social Sciences 212A-B.

214M Financial Markets (4). Roles, characteristics, policies of financial institutions, and behavior of capital markets. Attention to relationship between these aspects of the financial sector and federal monetary management and policy. Discussion of markets for specific instruments, such as federal funds, commercial paper, mortgages, and corporate bonds. Prerequisite: graduate standing or consent of instructor. Same as Management 241.

214N-O Public Choice I, II (4-4). Application of economics tools to understanding the behavior of democratic governments. Topics to be covered include Arrow's Impossibility Theorem, spatial voting models, the behavior of bureaucracies, the influence of special interest groups on policy, and analysis of the effects of electoral politics on public policy.

215A-B-C 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. Prerequisites: Economics 100C and concurrent enrollment in Social Sciences 211A.

217A-Z Topics in Economics (4) F, W, S. Study of current literature on topics in advanced economic analysis. Subject matter varies; may include microeconomics, macroeconomics, mathematical economics or econometrics as arranged by the instructor and specified in advance. Prerequisite: consent of instructor. May be repeated for credit.

219A Research Writing in Economics (4). For graduate students in economics 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.

220A-B-C Research Seminar in Politics, Society, and Social Issues (1.3-1.3-1.4) F, W, S. Seminar, two hours. Weekly reports and colloquia by faculty, students, and visitors. Students required to report on one research project over the course of three quarters. Prerequisite: admission to graduate program in Social Sciences or consent of instructor.

221A-B-C Foundations of Modern Political Science I, II, III (4-4-4). Tutorial seminars on the foundation of modern political science, major issues in micropolitics, major issues in macropolitics. Prerequisites: graduate standing or consent of instructor. Required of all first-year graduate students in political science.

221D-E-F Theoretical Approaches to Urban and Transportation Analysis (4-4-4). Selected theoretical perspectives on urban and transportation analysis based upon the study of human behavior. Assists graduate students and faculty associated with the Institute of Transportation Studies to formulate and complete research programs emphasizing interdisciplinary collaboration in the social sciences. Research findings are presented by students, faculty, and invited guests. Prerequisite: graduate standing or consent of instructor.

221G Issues in American Politics and Government (4). Seminar covering major issues in the study of American political behavior and institutions. Prerequisite: graduate standing or consent of instructor.

221U Research Seminar in Electoral Behavior (4). Students will be expected to design and carry out an original research project in the field of electoral behavior, analyzing data from recent national election studies. Emphasis will be placed on learning techniques of data analysis and presentation. Prerequisite: graduate standing or consent of instructor.

222A-B Seminar in Authority Relations I, II (4-4). Examination of authority relations in workplaces and educational institutions in several societies. Emphasis on adaptation to unfamiliar contexts and the possibility of "self-management" in organizations.

223A-B-C Theories of Political Structure (4-4-4). Examination of alternative theories of political structure with particular attention to those found among sociologists such as Parsons, anthropologists such as Lévi-Strauss and Nadel, psychologists such as Piaget, and Marxists such as Althusser and Poulantzas. Objective is to test the utility of these approaches for the construction of a theory of political structure. Prerequisite: graduate student or consent of instructor.

223D Comparative Political Institutions and Processes I (4). An introduction and overview of comparative institutions and processes at the national and cross-national level. Prerequisite: graduate standing or consent of instructor.

223G Foundations of Modern Political Science (4). Provides an introduction to major works by highly influential scholars such as de Tocqueville, Marx and Engels, Mosca, Durkheim, Weber, Wallas, and Lasswell, that constitute the foundation of much contemporary political science. Prerequisite: graduate standing. Concurrent with Political Science 134A.

224B Methods of Political Inquiry (4). A basic introduction to standard research techniques in political science. Prerequisite: undergraduate-level statistics or mathematics course or consent of instructor.

224C Critical Political Theory (4). An in-depth study of current political theories which are critical of the acceptance of mainstream political, economic, and sociological discussion of capitalist, democratic societies. Focus is on two theorists in particular: C.B. MacPherson and William E. Connolly; however, other theorists are covered. Prerequisite: graduate standing or consent of instructor.

224D Seminar in International Relations Theory (4). Study of the major theories guiding research and scholarship in international relations. Focus on major conceptual approaches (realism, transnationalism, marxism) and levels of analysis (systemic, state, and subnational), as well as on methodological/epistemological debates engulfing the field. Prerequisite: graduate standing.

224E Philosophy of Science (4). An introduction to the philosophical underpinnings of the scientific method of analysis and its applicability to the social sciences. Focuses on important topics and readings by authors such as Hempel, Popper, Kuhn, Feigl, Nagel, Suppe, and Shapiro. Prerequisite: graduate standing or consent of instructor.

224K Political Participation (4). Political participation in the joint contexts of comparative politics and political behavior. Considers what people do, various explanations of why they do it, and touches upon what difference it makes. Surveys different approaches to the study of participation. Prerequisite: graduate standing or consent of instructor.

224S Participation and Equality (4). Examines authority relations in workplaces and schools, addressing two specific questions: to what extent can schemes of workers' participation in workplace governance succeed and form general participatory dispositions, and does the governance of classrooms and schools make possible increased equality through increased access to schooling? Concurrent with Political Science 162E.

225F Human Nature, Altruism, and Public-Spirited Behavior (4). Philosophical and behavioral discussions of altruism and cultural influences on public-spirited behavior. Prerequisite: graduate standing or consent of instructor.

225Z 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. Concurrent with Political Science 131D and Sociology 127.

226C Political Economy (4). Introduction to the many relationships between economics, politics, and government, both within and among societies. Areas covered include contemporary American politics, American history, political theory, ideology, labor, property, multinational corporations, economic regulation, international relations, and the Third World. Prerequisite: graduate status or consent of instructor.

226E Revolutions and Collective Political Violence (4). The major theoretical issues raised by revolutions and other forms of collective political violence: their role in history; their causes; the "process" of revolutions from remote symptoms of unrest to their aftermaths; practices of revolution and insurgency; and the personality of revolutionary leaders.

226S Rationality in Social Science (4). Discussion of the history of the paradigm, how it has been refined into the cost-benefit model as it has been applied to political decision making; identification and examination of the main assumptions underlying the model; suggested modifications in the rationality paradigm. Prerequisite: graduate standing or consent of instructor.

227D Socio-economic and Political Change (4). Survey and discussion of the major contributions to the literature on the relationship between socio-economic development and political change. Comparison of theoretical (modernization, dependency, world systems theories) and methodological approaches (crossnational data analysis, comparative-historical studies). Emergence and breakdowns of democratic regimes in developed and developing countries, revolutions, and political developments in advanced industrial societies. Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 263L.

227E Positive Theory (4). Examination of the nature of "positive theories" and of three major approaches to constructing such theories in macropolitics: formal-legal study, political-culture inquiry, and rational-choice theory. General discussion of approaches with specific reference to explaining political stability and instability, legitimacy, and dissent. Concurrent with Political Science 133C.

229A-Z Special Topics in Politics and Society (4). Current research in politics and society. Topics vary.

230A-B-C Current Research in Social Relations (1.3-1.3-1.4) F, W, S. Research seminar in which a number of Social Relations faculty members present and discuss their current research.

230J-K-L Social Relations Dissertation Seminar I, II, III (4-4-4) F, W, S. Research design, problem conceptualization, and advanced data analysis in the area of social relations. Emphasis on methods of analysis in ethnography, cross-cultural research, and quasi-experimental research. Prerequisite: graduate standing or consent of instructor.

230X-Y-Z Proseminar in Social Relations I, II, III (4-4-4) F, W, S. Gives first-year graduate students a general background in theory and research and helps them prepare a long research paper. By the end of spring quarter, students must complete their paper and give a public lecture on its contents. The readings covered in the seminar are tailored to fit the students' research interests. A core course for first-year graduate students in social relations and anthropology. Prerequisite: graduate standing or consent of instructor.

231A-B-C Systems of Belief I, II, III (4-4-4). Approaches to exploring and understanding particular belief systems in unfamiliar cultures.

232A-B Advanced Experimental Anthropology (4-4). This seminar deals with the major topics in experimental anthropology. It has a heavy anthropological emphasis. Individual research projects required from each participant. Prerequisite: consent of instructor.

233A-B Mathematical Anthropology I, II (4-4). A variety of substantive problems dealt with by anthropologists and what can be done through formalizing this organized complexity, using mathematical, statistical, and computer-based techniques. Models of the structure, process, and evolution of cognitive, social, and ecological aspects of culture considered.

236A Content Analysis and Research Information Management (4). Various methodologies of discourse and content analysis. Techniques include scoring, TATs and folktales for power and intimacy motivation, analysis of interview protocols, event structure analysis in narrative, conversational analysis, categorizing emotional content, scoring for levels of ego development, using computers for content analysis. Prerequisite: graduate standing or consent of instructor.

236B Urban Anthropology and International Migration (4). Examines urban society and migration. Favors anthropological perspectives, but draws on sources from a number of disciplines. The nature of urban society, theoretical explanations for international migration, contemporary sending communities, economic vs. political migration, the female experience in migration, and the social integration and cultural adaptation of migrants in receiving communities. Prerequisite: graduate standing or consent of instructor.

236E Cultural Pathology I (4). Investigates ways of measuring adaptive potential in different cultural groups and testing psychosomatic linkages between cultural health and illness. Prerequisite: graduate standing or consent of instructor.

236H Cultural Dynamics (4). Seminar on the dynamics of culture as analyzed in the interplay among values, current social situation, and the self. Theories of cultural evolution, cultural transmission, and derived theories such as adaptive potential are discussed in connection with ongoing research projects. Prerequisite: graduate standing or consent of instructor.

236R Health and Social Relations (4). Comparative approach to health, illness, and curing from a social science perspective. Readings report on health issues in different societies which range from contemporary United States to modern tribespeople from lowland Venezuela. Prerequisite: graduate standing or consent of instructor.

237A Social Theory (4). Classical and contemporary theory for Sociology and Anthropology graduate students including the readings of Marx, Weber, Durkheim, and associated contemporary theorists. Prerequisite: graduate standing or consent of instructor.

237D Family and Life History (4). Interdisciplinary and comparative work in family and life history. Prerequisite: graduate standing or consent of instructor.

239A Topics in Anthropology (4-4-4) F, W, S. Current research in anthropology is presented. Topics vary.

240A-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.

241A Discrete Mathematics and Probability Taught by Gentle ARIS (4). A fully computerized course presenting the elementary notions of logic, set theory, and probability theory using ARIS (Automated Real-Time Instructional System). Students work at their own pace and are assigned homework problems finely tuned to their mastery of the material. Axiomatic logic, post-production systems, Rabin-Scott automata, random variables, including moments and the Chebyshev Inequality. Prerequisite: graduate standing or consent of instructor.

241B Introduction to Mathematical Statistics (4). Probability spaces, random variables, random sampling, maximum likelihood estimation, central limit theorems, hypothesis testing. Prerequisites: calculus and elementary statistics; graduate standing or consent of instructor. Formerly Social Science 241A.

241C Experimental Design (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. Formerly Social Science 241B.

242A-B-C Proseminar in the Cognitive Sciences (4-4-4) F, W, S. Year-long intensive introduction to the conceptual foundations and basic research results in the cognitive sciences for first-year graduate students. Prerequisite: graduate standing or consent of instructor.

242L Advanced Learning Theory (4). Learning is one of the main subdivisions of experimental psychology. Addresses key concepts in the area of learning theory and provides some examples from contemporary learning theory. Focuses on human learning; however, some examples are drawn from the animal learning area. Prerequisites: Social Science 242A; graduate standing or consent of instructor.

243F Human Factors (4). An introduction to the field of human factors for graduate students in cognitive sciences and related fields. Focuses on relationships between basic research in cognitive psychology and the study of human performance in a variety of environments. Prerequisites: graduate standing or consent of instructor.

243G-H-I Observer Theory I, II, III (4-4-4). 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. Same as Mathematics 216A-B-C.

243M Social Psychology of Networks (4). Review of network models used in small group and organizational research. Discussion of social psychology 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. Prerequisite: graduate standing or consent of instructor.

243R Psychology of Reading (4). Surveys the major components of skilled reading and the determinants of successful reading acquisition. Examination of contemporary models of skilled reading. Focuses on models of the development of reading. Research on the causes of developmental dyslexia. Concurrent with Psychology 143R and Linguistics 157. Prerequisite: graduate standing or consent of instructor. Formerly Social Science 243J.

244A Linguistic Theory (4). An analysis of recent developments in linguistic theory. Discussion centers on the formulation of the goals of linguistic theory and on the use of linguistic data in relationship to these goals. Prerequisites: Social Sciences 120 or equivalent; graduate standing or consent of instructor.

244B Seminar in Semantics and Cognitive Structure (4). Concentrates on recent research in semantic and cognitive structure. Prerequisite: some background in linguistics or psycholinguistics.

247B Research Seminar in Psycholinguistics (4). This seminar consists of informal presentation and discussion of ongoing research in psycholinguistics on the part of the participants. Those people wishing to take the course who are not currently engaged in a research project will design and execute one. Prerequisites: consent of instructor and graduate standing.

247C Language and Its Use: A Seminar in Pragmatics (4). This seminar covers selected topics dealing with the relationship between language and language use, including the work of some of the ordinary language philosophers, more recent developments in linguistics, and relevant thrusts in psychology. Prerequisite: consent of instructor.

248A Introduction to Phonology (4). Introduces students to important strands of modern phonological theory, in particular autosegmental and metrical phonology and distinctive feature theory. Prerequisite: graduate standing.

249 Topics in Cognitive Sciences (4) F, W, S. Current research in cognitive sciences is presented. May be repeated for credit as topic varies.

250C-D-E Spatial Representation in Cognitive Sciences (4-4-4). In cognitive sciences, it is important to disclose information hidden in complex data. The information is often captured in spatial form such as a configuration of points in an appropriate space. Two methods widely used for this purpose, factor analysis and multidimensional scaling, will be discussed from the beginning. Special emphasis will be placed upon nonmetric versions of these methods. Prerequisite: graduate standing or consent of instructor.

251A-B Mathematical Models of Cognitive Processes I, II (4-4). Mathematical models of various cognitive processes that have been developed mostly 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 are discussed. Prerequisite: graduate standing or consent of instructor.

253A-B-C Visual Perception I, II, III (4-4-4). General introduction to visual perception for graduate students. Current research topics emphasized. Prerequisite: graduate standing or consent of instructor.

253D-E-F Electro-optical Instrumentation Related to the Human Eye (4-4-4). Covers basic principles of the design of electro-optical systems and the relevant parameters of the human visual systems.

254A Attention (4). Examination of the descriptive and functional properties of attention, especially in visual perception. Topics include selection, orienting to and focusing on objects and parts of objects, acuity, priming, switching attention, capacity limitations, effort, and automatic processing. Prerequisite: graduate standing or consent of instructor.

255A-B Artificial Intelligence and Human Vision I, II (4-4). An introduction to computational investigations of human visual perception. Topics include edge detection, stereo, 3-D structure from 2-D motion, shape from shading and contour, shape recognition, and philosophy of the computational approach. Prerequisites: graduate standing or consent of instructor.

255P Physiological Bases of Visual Perception (4). Covers visual perception and the anatomy of physiology of the visual system. Topics include: the retina and visual pathway; visual sensitivity; color vision; spatial vision; motion perception; and development of the visual system. Prerequisites: graduate standing, consent of instructor.

261M Microcomputers in Social Science Research (4). Provides elementary instruction on the use of microcomputers for statistical analysis, network analysis, and graphics in social research. Prerequisite: Graduate standing or consent of instructor.

262A-B-C Research Methodology I, II, III (4-4-4). Seminar to help students focus on their dissertation topics and to help the instructors audition their current research interests. Graduate students at all levels and instructors make presentations describing their ongoing work.

263A Social Movements and Public Policy (4). Several recent changes in the U.S. have resulted from the interaction of a social movement, a new ideology, and government policies. Focuses on how these factors have changed the status of women. Changes in the status of minority groups also are considered.

263B Seminar in Social Structure (4). Seminar, three hours. Alternative theoretical approaches and research strategies for examining topics such as stratification, modernization, and socialization. Readings include Marx, Weber, Dahrendorf, Sahlins, and Lenski.

263F Feminist Theory (4). Analyzes current issues and theoretical debates in feminist research, primarily in the social sciences. What is a useful definition of feminism? Similarity vs. difference—is it useful to consider the experiences and problems of women in general? How can we integrate gender, class, and race? Do we need special research methods to explore feminist questions? Relates these general issues to specific areas of interest to students. Prerequisite: graduate standing or consent of instructor.

263G Participatory and Feminist Research (4). Methods of participatory research developed by feminists, Paulo Freire, and others. These methods are non-hierarchical, focused on everyday experience, and action-oriented. Each student does a preliminary project with the members of a community; projects may focus on family and gender, racism and ethnicity, oppression in the workplace, or other topics. Prerequisite: graduate standing or consent of instructor.

263H Development and Social Change (4). Examines both classical and contemporary macrosociological theories of modernization and development. Competing perspectives are discussed and evaluated in light of their ability to explain concrete problems of underdevelopment such as economic stagnation, social inequality, political instability, and overpopulation. Prerequisite: graduate standing or consent of instructor.

263L Socio-economic and Political Change (4). Survey and discussion of the major contributions to the literature on the relationship between socio-economic development and political change. Comparison of theoretical (modernization, dependency, world systems theories) and methodological approaches (cross-national data analysis, comparative-historical studies). Emergence and breakdowns of democratic regimes in developed and developing countries, revolutions, and political developments in advanced industrial societies. Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 227D.

264A Seminar in Structuralism and Semiotics (4). A fresh look at structuralism and semiotics to determine whether there are some symbolic systems (e.g., myths, designs, food, clothes) that are enough like language to profit from the comparison. Prerequisite: graduate standing or consent of instructor.

270A Proseminar in Expressive Forms (4). A survey of the literature pertaining to the cultural and social analyses of expressive forms, with an emphasis upon general theoretical issues. Required of all Comparative Culture graduate students.

271A-B-C Colloquium on Dominant American Culture I, II, III (4-4-4) F, W, S. Survey of the literature and interpretations of major American institutions and lifeways—demography, population, movements, and settlement patterns; the family, education, and enculturation processes; law and politics, economic life, religion and belief systems, science and technology; the mass media and the popular arts. Required of all Comparative Culture graduate students.

273A Proseminar in Social Inquiry (4). A survey of the philosophy and conceptual and methodological tools of the social sciences, with emphasis on the problems of interdisciplinary research. Required of all first-year Comparative Culture doctoral students.

274 Culture-Specific Colloquia. Each is a two-quarter survey of the key literature on migration, historical position within the political economy, major federal and state legislation that pertain to the groups, race relations, demography, population movements, economy, family and households, enculturation, sodalities and voluntary organizations, political organizations and politics, religion, ideology, ceremonialism, and the popular arts. Required of all Comparative Culture graduate students.

274A-B Afro-American Culture I, II (4-4)

274C-D Asian-American Cultures I, II (4-4)

274E-F Hispanic-American Cultures I, II (4-4)

274G-H Native American Cultures I, II (4-4)

275A-B-C Methods of Social Inquiry I, II, III (4-4-4). 275A: Focuses on qualitative methods including comparative historical research, participation observation, and interviewing techniques. 275B: Concentrates on survey research techniques, including cross-cultural survey, sampling questionnaire construction and coding, and analysis of data. 275C: Application of mathematical models to the analysis of the data. Required of all

Comparative Culture graduate students emphasizing social inquiry. Prerequisite: graduate standing or consent of instructor.

276A-B-C Seminar in Expressive Forms of American Culture I, II, III (4-4-4). Introductory survey of major interpretations of expressive forms produced by cultural groups found in the United States, together with significant examples of those expressive forms. Topics include literature, visual arts, folklife and popular culture, myth, and ritual. 276A: Focuses on expressive forms of dominant American culture. 276B-C: Deals with Afro-American, Asian-American, Hispanic-American, and Native American cultures. Required of all Comparative Culture graduate students emphasizing expressive forms.

279A-Z Special Topics in Comparative Culture (4). Current research in comparative culture. Topics vary from quarter to quarter. Prerequisite: graduate standing or consent of instructor.

280A-B-C Colloquium in Social Networks (1.3-1.3-1.4) F, W, S. A seminar drawing on visiting scholars and local faculty designed to keep students abreast of current developments in Social Networks research.

281A Network Theories of Social Structure (4). Explores communicative, social, political, economic, and other flows of behavior using foundational network concepts and measures such as centrality, group, role, pattern, and system. What is social structure, what are the processes that generate structures, and what are the behavioral consequences of structural rather than individual dispositional properties?

282A Kinship Structures (4). The kinship systems of the world offer many interesting structures for algebraic analysis. The first such analysis was done for the Australian marriage class systems using the theory of permutation groups. This analysis will be extended to cover more aspects of marriage class structures and will be generalized to such systems as the Crow-Omaha.

283A Interaction Models (4). Human groups can be considered as finite systems of individuals some of whom interact in pairs. Each individual is assigned an attribute from a ring of values, and the set of these attributes is called the "state" of the system. States, together with graphs on individuals, are used to define stochastic processes. These processes are used to model such phenomena as ferromagnetism in physics and clique formation in social science.

284A-B Research Design I, II (4-4). Focuses on data collection, organization, and analysis in natural (ethnographic or quasi-experimental) settings. Data collection processes such as interviewing, participant-observation, behavior observation, and questionnaires. Research design issues such as sampling, control groups, longitudinal research, and multi-method approaches. Emphasis on relationships and systematic approach to integration of qualitative and quantitative analyses.

285A Topics in Graph Theory (4). A detailed examination of selected topics in the theory of graphs, digraphs, and hypergraphs with a view toward applications to problems of social networks analysis.

290 Dissertation Research (4 to 12) F, W, S. May be repeated for credit. Prerequisite: consent of instructor.

291 Directed Reading Examination Preparation (4) F, W, S

298 Self-Directed Study (1 to 12) Summer. May not be applied towards residency requirements or toward total units required for a degree. May be repeated for credit. Prerequisite: graduate standing.

299 Independent Study (4) F, W, S. May be repeated for credit.

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants.

Department of Information and Computer Science

Leon J. Osterweil, **Chair**

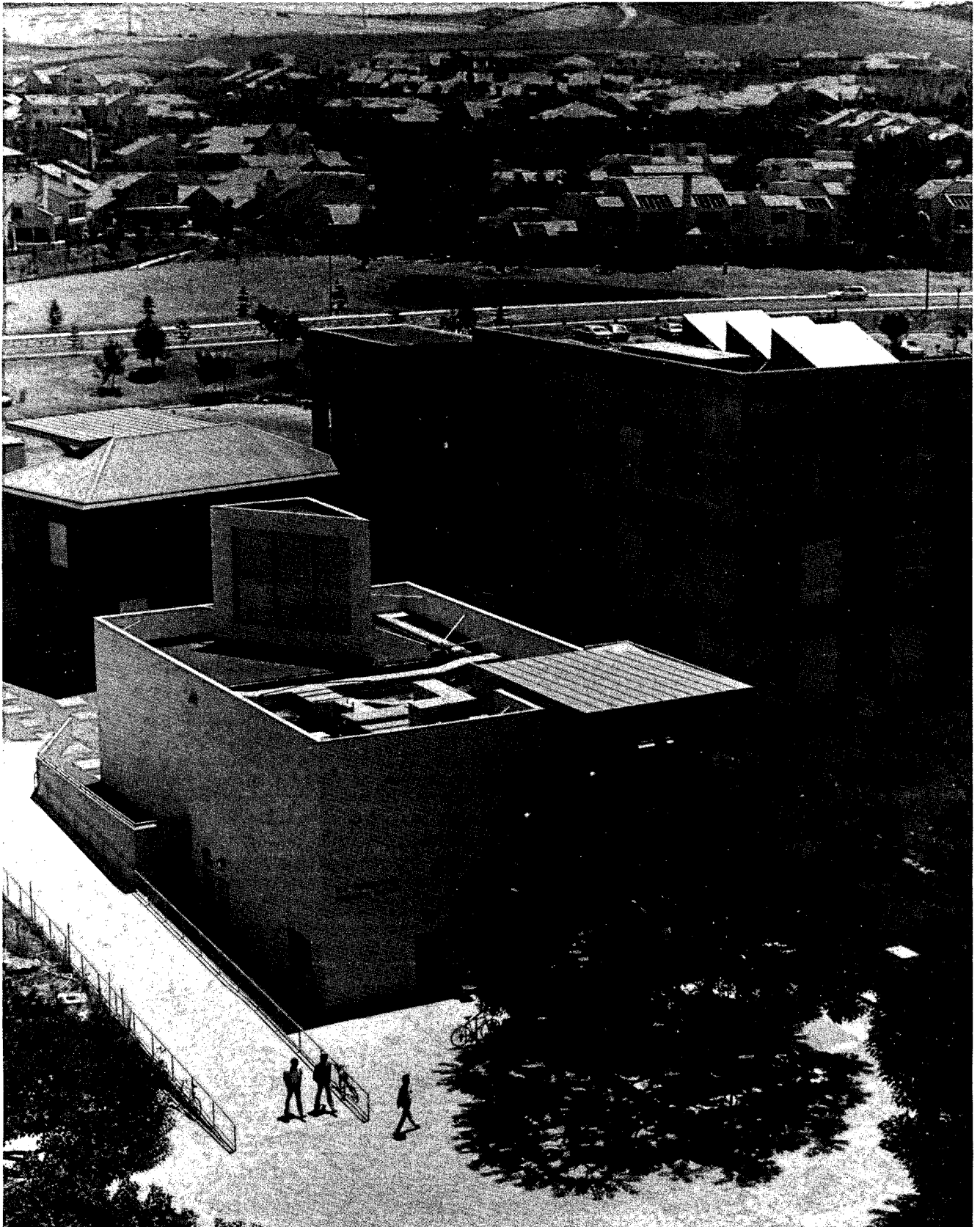
444 Computer Science

Undergraduate Counseling: (714) 856-5156

Graduate Counseling: (714) 856-5597

Faculty

- Nader Bagherzadeh, Ph.D. University of Texas at Austin, *Assistant Professor of Electrical Engineering and of Information and Computer Science* (parallel processing, distributed computing, computer architecture, neural networks)
- Yannis Bakos, Ph.D. Massachusetts Institute of Technology, *Assistant Professor of Management and of Information and Computer Science* (management information systems, strategic uses of information technology, economics of computing)
- Lubomir Bic, Ph.D. University of California, Irvine, *Associate Professor of Information and Computer Science and of Electrical Engineering* (parallel processing; multiprocessor architectures; semantic and object-oriented database systems)
- Douglas M. Blough, Ph.D. The Johns Hopkins University, *Assistant Professor of Electrical Engineering and of Information and Computer Science* (parallel architectures, distributed algorithms, fault-tolerant computing, computer networks)
- Alfred M. Bork, Ph.D. Brown University, *Professor of Information and Computer Science* (computer-based learning; production systems for computer-based learning; screen design; simulation; computer graphics)
- Rina Dechter, Ph.D. University of California, Los Angeles, *Assistant Professor of Information and Computer Science* (complexity of automated reasoning models: constraint-based reasoning, distributed connectionist models, causal models, probabilistic reasoning)
- Michael Dillencourt, Ph.D. University of Maryland, *Assistant Professor of Information and Computer Science* (computational geometry, analysis of algorithms, data structures)
- Nikil Dutt, Ph.D. University of Illinois, *Assistant Professor of Information and Computer Science and of Electrical and Computer Engineering* (design modeling, languages and synthesis, CAD tools, computer architecture)
- David Eppstein, Ph.D. Columbia University, *Assistant Professor of Information and Computer Science* (computational geometry, analysis of algorithms, molecular biology)
- Julian Feldman, Ph.D. Carnegie Institute of Technology, *Professor of Information and Computer Science* (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)
- Daniel D. Gajski, Ph.D. University of Pennsylvania, *Professor of Information and Computer Science and of Electrical Engineering* (parallel algorithms and architectures; silicon compilation; expert systems for design; science of design)
- Richard H. Granger, Ph.D. Yale University, *Associate Professor of Information and Computer Science* (cognitive science; natural language processing; memory models)
- Vijay Gurbaxani, Ph.D. University of Rochester, *Assistant Professor of Management and of Information and Computer Science* (economics of information systems management, impact of information technology on organization and market structure)
- Daniel Hirschberg, Ph.D. Princeton University, *Professor of Information and Computer Science* (analysis of algorithms; concrete complexity; data structures; models of computation)
- Donald Hoffman, Ph.D. Massachusetts Institute of Technology, *Professor of Psychology and Information and Computer Science* (human and machine vision; cognitive science; artificial intelligence)
- Dennis F. Kibler, Ph.D. University of California, Irvine, *Associate Professor of Information and Computer Science* (learning control knowledge; planning and problem solving; parallel processing of logic programs)
- K. H. (Kane) Kim, Ph.D. University of California, Berkeley, *Professor of Electrical Engineering and of Information and Computer Science* (distributed real-time computer systems, fault-tolerant computer systems, real-time learning systems)
- John Leslie King, Ph.D. University of California, Irvine, *Professor of Information and Computer Science and Management* (economics of computing; policies for computer management and use in organizations; public policy and social impact aspects of computer use)
- Rob Kling, Ph.D. Stanford University, *Professor of Information and Computer Science and of Administration* (social analysis of computing—computer technology and public policy, sociology of computing)
- Kenneth L. Kraemer, Ph.D. University of Southern California, *Professor of Management and Information and Computer Science, and Director of the Public Policy Research Organization* (economics and management of computing; organizational and social impacts of computing; information technology and public policy; management information systems/decision support systems)
- Fadi Kurdahi, Ph.D. University of Southern California, *Assistant Professor of Electrical Engineering and of Information and Computer Science* (VLSI structures; design automation of digital circuits)
- Patrick Langley, Ph.D. Carnegie-Mellon University, *Associate Professor of Information and Computer Science* (machine learning and discovery; cognitive architectures; intelligent teaching systems)
- Lawrence Larmore, Ph.D. University of California, Irvine, *Professor of Information and Computer Science* (design and analysis of algorithms, optimal coding, parallel computation)
- Nancy Leveson, Ph.D. University of California, Los Angeles, *Associate Professor of Information and Computer Science* (information systems design; software safety and reliability; programming language semantics; database systems)
- George S. Lueker, Ph.D. Princeton University, *Professor of Information and Computer Science* (computational complexity; probabilistic analysis of algorithms; data structures)
- Gary S. Lynch, Ph.D. Princeton University, *Professor of Biological Sciences and of Information and Computer Science* (learning and memory, synaptic change, computational neuroscience)
- Alexandru Nicolau, Ph.D. Yale University, *Associate Professor of Information and Computer Science and of Electrical and Computer Engineering* (architecture, parallel computation, and programming languages and compilers)
- Paul O'Rourke, Ph.D. University of Illinois, Urbana, *Assistant Professor of Information and Computer Science* (machine learning; automated reasoning)
- Leon J. Osterweil, Ph.D. University of Maryland, *Chair and Professor of Information and Computer Science* (software process, software environments, software testing and analysis, and combinatorics)
- Michael J. Pazzani, Ph.D. University of California, Los Angeles, *Assistant Professor of Information and Computer Science* (human and machine learning, natural language understanding, cognitive science)
- Mark S. Poster, Ph.D. New York University, *Professor of History and of Information and Computer Science* (modern European intellectual history)
- Debra J. Richardson, Ph.D. University of Massachusetts, Amherst, *Assistant Professor of Information and Computer Science* (software engineering; program testing; life-cycle validation; software environments)
- Isaac Scherson, Ph.D. Weizmann Institute of Science (Israel), *Associate Professor of Information and Computer Science* (parallel computing architectures, massively parallel systems, parallel algorithms, complexity, orthogonal multiprocessing systems)
- Richard W. Selby, Ph.D. University of Maryland, *Associate Professor of Information and Computer Science* (software engineering testing; software metrics; empirical evaluation of software methodologies)
- Thomas A. Standish, Ph.D. Carnegie Institute of Technology, *Professor of Information and Computer Science* (programming environments; data structures)
- Tatsuya Suda, Ph.D. Kyoto University, *Associate Professor of Information and Computer Science and of Electrical and Computer Engineering* (computer networks; distributed systems; performance evaluation)
- Richard Taylor, Ph.D. University of Colorado, *Associate Professor of Information and Computer Science* (programming environments; verification and testing of programs; concurrent processes)



The ICS/Engineering Research Facility, designed by award-winning architects Frank O. Gehry and Associates, houses classrooms, laboratories, and faculty offices. Another facility currently under construction will house Department of Information and Computer Science research groups in artificial intelligence and computer science design.

Nicholas P. Vitalari, Ph.D. University of Minnesota, *Associate Professor of Management and Information and Computer Science* (systems analysis and design; management information systems; social analysis of computing)

Lecturers

Stephen Franklin, Ph.D. University of Chicago, *Lecturer in Information and Computer Science* (computer-based educational technology, computer graphics, teaching of programming)

Steven Hampson, Ph.D. University of California, Irvine, *Lecturer in Information and Computer Science* (connectionism, neural networks)

Joan Isenbarger, M.S. University of California, Irvine, *Lecturer in Information and Computer Science* (technical writing)

Norman Jacobson, B.S. University of California, Irvine, *Lecturer in Information and Computer Science* (formal models, software engineering, programming methodologies, data structures)

David G. Kay, J.D. Loyola Law School, Los Angeles; M.S. University of California, Los Angeles, *Lecturer in Information and Computer Science* (computer law, including protection of proprietary right in software and liability for failure of computer systems; ethics in computing; computer science education, including curricular development and evaluation of student software)

Raymond Klefstad, Ph.D. University of California, Irvine, *Lecturer in Information and Computer Science* (programming languages, compilers, software engineering)

Frank Murgolo, Ph.D. University of California, Irvine, *Lecturer in Information and Computer Science* (data structures and algorithms)

Rika Yoshii, Ph.D. University of California, Irvine, *Lecturer in Information and Computer Science* (natural language processing, computer-aided instruction)

The development of the modern digital computer has made possible the solution of large-scale information processing problems in science, industry, and government. These problems include predicting the orbit of a satellite, simulating the economy, keeping track of inventories, and sending mail electronically. Such problems are solved by having the computer execute a procedure—a sequence of information processing operations including, but not limited to, arithmetic operations, testing and comparing numbers and representations of alphabetic information, and changing the sequence of operations within the computer. Information and computer science is concerned with the development of procedures which are effective and efficient, languages suitable for stating these procedures, systems for executing procedures, and with the study of the social setting in which procedures are used.

The implications of research in information and computer science extend beyond direct applications of the modern digital computer. Many animate and inanimate systems can be usefully viewed as information processing systems and analyzed in terms of the way they represent, store, and process information. Thus, information and computer science provides a point of view, an approach, for studying phenomena in many sciences.

Computing resources available on the campus include interactive access to the systems in the UCI Computing Facility—a DEC VAX 11/780, 11/785, and 8350 (VMS), and a Sequent Symmetry shared memory multiprocessor (Unix).

Instructional computing resources within the Department of Information and Computer Science (ICS) include four microcomputer laboratories using Toshiba T-300s, Macintosh II workstations, and Macintosh Pluses. An advanced workstation laboratory comprising 10 Sun 3/50 workstations also is available. Upper-division students have access to a Sequent Symmetry Unix timesharing machine. Additional departmental resources for research include a second Sequent Symmetry and over 150 Sun workstations.

Degrees

Information and Computer ScienceB.S., M.S., Ph.D.

Honors

Honors at graduation, e.g., *cum laude*, *magna cum laude*, *summa cum laude*, are awarded to approximately 12 percent of the graduating seniors. Students are nominated for honors based on criteria such as grade point average (including overall, ICS, mathematics); number of upper-division ICS courses completed beyond the minimum; courses taken outside ICS beyond required breadth; and research activities. 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. To be considered for honors, students must file their application for graduation by March 31. Students must graduate no later than the end of the spring quarter to receive honors at graduation.

Careers for the ICS Major

Students with undergraduate degrees in Information and Computer Science have been successful in finding career opportunities in recent years. Entry-level positions have included systems programmer, systems analyst, marketing and sales support personnel, and software engineer. The Career Planning and Placement Center provides services to UCI students and alumni including career counseling, information about job opportunities and a career library. The Department of Information and Computer Science, in conjunction with the Career Planning and Placement Center, offers workshops on resume preparation, job search, interview techniques, and internship opportunities, as well as alumni programs. Additional information is available in the Career Planning and Placement Center section.

A Bachelor's degree in Information and Computer Science can be part of a preparatory program for graduate work in computer science or a related field.

Undergraduate Program

The major in Information and Computer Science (ICS) provides serious students the opportunity to study the underlying principles, current practice, and probable future trends of computer science. Just as it is important for students to acquire a broad and basic education in the major segments of modern academic study, it is essential that they obtain an educational foundation that will permit them to continue to learn and keep up with the expanding field of computer science. It is this focus on foundations for lifelong learning that is the hallmark of the ICS undergraduate program.

The ICS curriculum enables students to study basic concepts and practice of data organization, algorithm design, organization of hardware and software systems, system design and construction, theoretical models and analysis, artificial intelligence, and the nature of the personal, social, and organizational impact of computers. In the process of mastering the ICS curriculum, students learn several current programming languages, operating systems, support tools such as graphics packages, and hardware systems. Students also learn to use various current systems aimed at improving personal productivity.

These objectives provide a basis for professional work and graduate study in computer science and sophisticated applications of computers. While many ICS graduates are successfully pursuing careers in a variety of fields, including many kinds of applications, the curriculum focuses on the underlying principles of computer science rather than on specific applications. Students whose interests are primarily applications-oriented are encouraged to pursue in-depth study in another field, combined with a selection of basic courses in ICS.

NOTE: The award of a B.S. degree in ICS requires that students complete the course requirements for the degree *and* that they be enrolled in the ICS major. Students who would like to change their major to ICS should contact the ICS Undergraduate Counseling Office to discuss their plans.

Students enrolled in other degree programs who are interested in digital computer programming and the field of computer science will normally begin their studies with Introduction to Computer Science I (ICS 21) and continue in the programming sequence with Introduction to Computer Science II and III (ICS 22 and 23) as far as their interests require and their programs permit. Students who are doing, or planning to do, extensive work with numerical problems are advised to consider courses in numerical analysis, statistics, probability, or other applied mathematics areas.

Students interested in courses in computer engineering and digital systems should also consult the list of courses offered by the School of Engineering. Students can declare a double major in Engineering and ICS; early consultation on such a double major is advisable.

The ICS Undergraduate Counseling Office is staffed by professional academic counselors and peer advisors. These individuals are available to assist students with program planning, questions on University and departmental policies and procedures, progress toward graduation, and other questions 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 area of specialization and on preparation for graduate school.

Transfer Student Policy

Students who transfer to UCI in fall 1991 or thereafter will be held to the following requirements:

1. One year of college mathematics. Courses equivalent to Mathematics 6A-B-C are preferred as this facilitates scheduling after transfer to UCI. If not available, students should take first-year calculus. A semester of precalculus and a semester of calculus may not be used to satisfy this requirement.
2. Completion of one year of computer science courses. The year of computer science course work must contain one programming course involving concepts such as those found in Pascal, Ada, or another modern, high-level language. For students who entered college in fall 1987 or thereafter, programming-only courses in BASIC, FORTRAN, and COBOL are not sufficient. Additional classes beyond the programming course must be taken to satisfy the year of computer science. It is strongly recommended that these courses be selected from classes that do not focus strictly on learning a programming language, such as courses in data structures or computer architecture, if such courses are available.
3. Satisfaction of the lower-division writing requirement (one year of college English composition).

NOTE: For students who entered college in fall 1987 or thereafter, the lower-division requirement in ICS consists of five courses which must be taken in a certain order and which are prerequisites for upper-division courses. Students who transfer to UCI as juniors and must complete all or part of this sequence will therefore find that it will take longer than two years to complete their degrees.

Alternately, lower-division eligible transfer students can come to the campus without declaring a major, take the courses necessary to meet the ICS change-of-major requirements, and then apply for a change of major.

On the basis of our experience over the past several years, we anticipate that the number of incoming freshmen and advanced-standing students who elect ICS as a major will exceed the number of positions available. In this case, incoming applicants who elect ICS cannot all be admitted to the major.

To ensure that their application is considered 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 affirmative action considerations.

Requirements for the Bachelor's Degree

University Requirements: See pages 50–53.

Information and Computer Science Major Requirements

Lower-division (these are prerequisites for required upper-division ICS courses): Mathematics 6A-B-C and 2A-B-C; ICS 21, 22, 23, 51, 52.

Upper-division: ICS 121, 131, 141, 151, 161, 171; two project courses selected from ICS 125B, 135, 145A or B, 155A or B, 165, 175A or 175B; one course in each of two areas, selected from ICS 132, 142 or 143, 152, 162, 172; three upper-division mathematics courses selected from the following list, including at least two courses with the same number (Mathematics 120 and 121 are considered to have the same number): Mathematics 105A-B-C and 105LA-LB-LC, 120 and 121A-B, 123A-B-C, 129A-B-C and 129LA-LB-LC, 130A-B-C, 131A-B-C and 131LA-LB-LC, 140A-B-C, 141A-B, 142A-B-C, 143A-B-C, 144A-B, 150A-B-C, 162A-B, 171A-B-C.

Honors Program in Information and Computer Science

The honors program in ICS provides an opportunity for selected students majoring in ICS to pursue advanced work in one of the research areas in the Department. Admission to the program is based on a formal application submitted to the Department in the spring. Applications are available each year beginning May 15 and must be submitted by June 15 to ensure consideration.

For an application to be considered, the following conditions must be met (although exceptions may be granted in unusual circumstances):

1. The student must have completed the required lower-division ICS courses and Mathematics 6A-B-C by the end of the spring quarter in which the application is made.
2. The student must have the following grade point averages:
 - a. an overall grade point average of at least 3.2;
 - b. a grade point average of 3.5 or higher in the required lower-division ICS courses;
 - c. a grade point average of 3.5 or higher in Mathematics 6A-B-C.
3. Application must be made in the spring of the student's sophomore year. Certain exceptions are available, for example, for transfer students whose completion of the lower-division courses is delayed.

In selecting students for the honors program, the Department also considers evidence of ability and interest in research. Students admitted to the program participate in the ICS Honors Seminar (ICS 197), which provides an introduction to research areas in the Department, followed by a minimum of two quarters of independent supervised work (ICS 198). In order for the student to be considered to have successfully completed the honors program, the work must be certified to be of honors quality by the student's advisor and by the program advisor. The 198s may be used to satisfy one of the project courses required for the major.

The 3-2 Program with the Graduate School of Management

Outstanding students who are interested in a career in management may wish to apply for entry into the Graduate School of Management's 3-2 Program. Students normally apply for this program early in their junior year. See the Graduate School of Management section for additional information.

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 more than 85 host universities and colleges in 33 countries throughout the world. Additional information is available in the Education Abroad Program section.

Graduate Program

Master of Science Program

The Master of Science degree in Information and Computer Science is awarded only to Ph.D. students who complete necessary requirements. Students are not admitted for graduate study leading only to the Master's degree.

Ph.D. Program

The graduate program in Information and Computer Science leads to a Ph.D. degree. The program is research-oriented and encourages students to work together with faculty to solve advanced problems in computer science. Current research activities include analysis of algorithms, artificial intelligence, computer systems design, programming environments, software engineering, computer-aided instruction, and the study of the interrelation of computing, organizations, policy, and society. The Department receives substantial extramural funding. The Ph.D. program is designed for full-time study, and can be completed in five to six years, depending upon the focus of research. Students enrolled in the Ph.D. program must maintain satisfactory academic progress.

Admission

Applications are evaluated on the basis of the student's prior academic record and potential for creative professional contributions. Applicants are expected to have good skills in computer programming and skills in mathematics equivalent to those obtained by students who complete college-level courses in logic and set theory, analysis, linear algebra, and modern algebra or probability and statistics. Computer science undergraduate training is not required, but some familiarity with machine organization, data structures, software systems, and formal models is helpful.

Applicants should take both the GRE General Test and the GRE Subject Test in Computer Science. Personal interviews are desirable but not required. Additional information about the graduate program in Information and Computer Science and application forms may be obtained by writing to the Graduate Counselor in the Department.

Financial Assistance

Financial assistance is available to students in the form of teaching and research assistantships. There are some research and teaching assistantships available for the summer as well. More than half of the doctoral students in residence receive financial assistance.

General Requirements for the Ph.D.

The Ph.D. program has three phases.

Phase I. Breadth: The purpose of the breadth phase is to develop the student's understanding of broad areas in computer science. Understanding is certified by satisfactory performance in core courses. Nine graduate courses must be taken as designated by the faculty, with no grade below a B. These courses include four core courses plus one course from each of the five concentrations. Students must complete Phase I by the end of their second year and must have a research advisor before entering Phase II.

Phase II. Depth: The purpose of the depth phase is to develop research skills and creative problem solving ability. The student must select an area of specialization and

1. demonstrate deep understanding of that area by satisfactory performance in two advanced courses and on a written comprehensive examination
2. pass one other advanced course of the student's choice
3. demonstrate research ability by preparing a survey paper and a research paper of publishable or near-publishable quality
4. present a research colloquium
5. receive approval from the faculty to take a Candidacy Oral Examination
6. pass the Candidacy Oral Examination conducted by a formal candidacy committee appointed by the Dean of Graduate Studies.

The area of specialization is normally one of the Department's five concentrations: computer systems design; software; theory of algorithms and data structures; artificial intelligence; computing, organizations, policy, and society (CORPS).

However, an area of specialization other than one of the above concentrations may be chosen with the approval of the graduate advisor.

All students in the Ph.D. program are eligible to be awarded an M.S. degree upon completion of all course requirements of Phase I and II of the Ph.D. program plus either the Phase II paper requirement or the Phase II written examination.

Phase III. Dissertation: This phase is devoted almost exclusively to the dissertation. When the student has passed the formal qualifying examination and advanced to candidacy, a doctoral committee is appointed to supervise the dissertation and approve it on behalf of the Graduate Council.

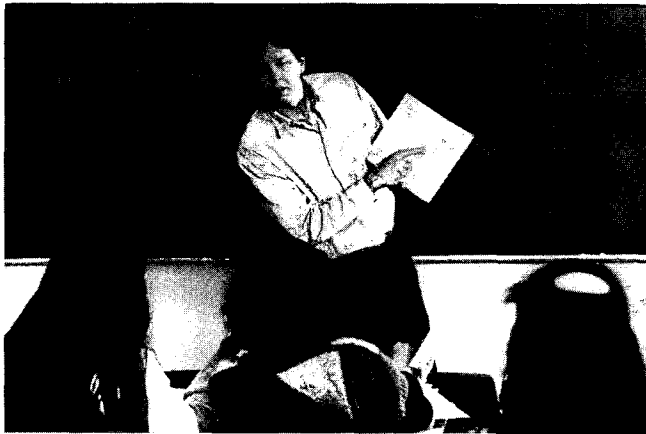
Teaching Requirement: All ICS doctoral students are required to participate in teaching activities before being advanced to candidacy. Teaching activities in summer or night school, service at other universities, etc., may be accepted as fulfillment of the requirement.

Programming Competence Requirement: A computer scientist must be able to read and write programs in assembly, algebraic, and nonnumerical languages.

Courses in Information and Computer Science

Lower-Division

1A Programming and Problem Solving I (4) F, W, S, Summer. Concepts and properties of procedures; language and notation for describing procedures; application of a specific procedure-oriented language to solve simple numerical and nonnumerical problems using a computer. Principles for using computers effectively and for clearly conceiving and expressing procedures. Designed to give the student an overview of computer science. (ICS 1A and Engineering 10 may not both be taken for credit.)



Introductory course work for the major in Information and Computer Science emphasizes computer organization, programming, and information structures.

10 Computers and Society (4). Introduction to the current state of information and computer science and technology for the nontechnical student. An overview for the person who wants to understand computers and automation as a major element in our technological society. Terminology and concepts; information structures; hardware and software; programming languages; applications in business, science, and education; implications. May not be taken for credit by ICS majors.

21 Introduction to Computer Science I (6) F, W, S. First of a three-quarter introductory course. Introduces basic concepts, fundamental laws and principles of software and hardware organization; program construction, applications, and policy and social issues. Develops initial programming skills. Introduces useful computer-based tools for analysis, expression, and discovery. (V)

22 Introduction to Computer Science II (6) W, S. Second of a three-quarter introductory course. Builds on ICS 21: in-depth concepts of programming and software systems organization. Other topics include program analysis and correctness, advanced data structures, system design techniques, and alternative programming modes. Prerequisite: ICS 21. (V)

23 Introduction to Computer Science III (6) F, S. Third of a three-quarter introductory course. Focuses on algorithms of fundamental importance in computer science and their mathematical analysis, basic data structures for primary and secondary memory, storage allocation and management techniques, data description, and design techniques. Prerequisites: ICS 22 and Mathematics 6A. (V)

41 Introduction to Methods for Applications Programming (4). Introduction to software design, implementation, and testing techniques appropriate to applications programming. Development of a design which is implemented in different languages. Strengths and weaknesses of several languages. Prerequisite: ICS 21 or equivalent. Formerly ICS 90.

51 System Architectures (6) F, S. Operation of hardware components, ways of interconnecting them to form systems, means of modeling and analyzing their behavior, and structures that may be realized in either hardware or software. Laboratory work illustrates these concepts in the context of assembly language programming. Prerequisites: ICS 23 and Mathematics 6B.

52 Systematic Software Construction (6) F, W. 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 a project illustrating these elements. Prerequisite: ICS 51.

80 Special Topics in Information and Computer Science (2-4) F, W, S. May be repeated for credit.

92 Engineering and Computer Science Educational Laboratory (ECSEL) (0) F, W, S. Comprehensive academic support designed primarily for underrepresented or underprepared majors in Engineering, ICS, or selected areas of the physical sciences. Typical program activities: tutoring, study skills, career planning, self-esteem enhancement, library

research techniques, graduate study planning, and independent studies. Two to four units of workload credit only. Pass/Not Pass Only. Same as Engineering E92.

Upper-Division

NOTE: Empirical studies are one method used to advance the state-of-the-art in computer science. As such, participation in experiments is part of the regular structure of ICS 121 and 125B, as well as other courses. Students' abilities to achieve their grade in a course will not be affected by their participation in experiments.

121 Introduction to Software Engineering (4) F, W. Broad introduction to the concepts, techniques, and current practice of software engineering. Software process models as an organizing concept; principles relevant to each part or aspect of the different models; exercises to illustrate important tools and concepts. Prerequisites: ICS 52, Mathematics 2A-B-C, Mathematics 6A-B-C.

125B Project in System Design (4) F, W, S. Specification, design, construction, testing, and documentation of a complete software system using concepts learned in ICS 52, 121, and 141. Special emphasis on the need for and use of teamwork, careful planning, and other techniques for working with large systems. Prerequisites: ICS 121 and 141. Formerly ICS 195.

131 Social Analysis of Computerization (4) F, W, S. Introduction to computerization as a social process. Examines the social opportunities and problems raised by new information technologies, the ways individuals and groups mobilize support for their preferences, and the consequences of different choices. Computerization and the quality of work life, personal privacy, organizational productivity, unemployment, and the manageability and accountability of large systems. Prerequisites: For majors: ICS 52, Mathematics 6A-B-C, Mathematics 2A-B-C; for nonmajors: ICS 1A or equivalent. Both groups must have completed the lower-division writing requirement. Formerly ICS 193.

132 Organizational Information Systems (4) W. 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. Prerequisite: ICS 131. Formerly ICS 181.

135 Project in the Social and Organizational Impacts of Computing (4) S. 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 ICS 131, 132, and other ICS courses. Prerequisite: ICS 132. Prior course work in research methodology or statistics is recommended.

139 Technical Writing and Communication Skills (4) F, W, S. Study and practice of critical and technical writing as it applies to the field of computer science. Each student writes essays of varying lengths, totaling at least 4,000 words. Prerequisite: completion of lower-division writing requirement; upper-division standing; Computer Science majors only.

141 Programming Languages (4) W, S. In-depth study of several contemporary programming languages stressing variety in data structures, operations, notation, and control. Examination of languages for list, string, and array manipulation; languages for structured programming and systems programming; command and query language design; programming style; run-time representations, environments, and execution strategies. Prerequisites: ICS 52, Mathematics 2A-B-C, and Mathematics 6A-B-C.

142 Compilers and Interpreters (4) F, S. Introduction to theory of programming language processors. Study of compilers focusing on lexical analysis, syntax analysis, and compile-time mechanics including code generation and optimization. Study of interpreters focusing on execution of interpretive representations (such as postfix), on mechanics of interpretation, and on run-time management of data structures. Prerequisite: ICS 141.

143 Principles of Operating Systems (4) S. 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. Prerequisite: ICS 141. Formerly ICS 152.

145A Language Processor Construction (4) W. 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: ICS 142. Formerly ICS 145.

145B Project in Operating System Organization (4) F. Detailed specification and design of an actual operating system. Hardware/software tradeoffs. Emphasis on logical organization of system and communication of the design to implementors through appropriate representations. Prerequisite: ICS 143. Formerly ICS 156.

147 System Measurement and Evaluation (4). Framework and methodology for determining the performance of existing and proposed information processing systems. Evaluation from the viewpoints of users, designers, and customers. Prerequisites: ICS 143 and Mathematics 131A or equivalent. Formerly ICS 191.

151 Introduction to Computer Systems Architecture (4) F, W. 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 52, Mathematics 2A-B-C, and Mathematics 6A-B-C. ICS 151 and Engineering ECE 131 may not both be taken for credit. Formerly ICS 151A.

152 Intermediate Computer Systems Architecture (4). Hardware description languages. Issues in machine organization including: arithmetic/logic unit design, control unit design. Memory organization, I/O processing and interrupts. Microprocessor system design. Prerequisite: ICS 151. ICS 152 and Engineering ECE 132 may not both be taken for credit. Formerly ICS 151B.

155A 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: ICS 151. Formerly ICS 154.

155B Computer Design Laboratory (4) W. 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: ICS 151 or concurrent enrollment.

161 Design and Analysis of Algorithms (4) F, W. Discussion of 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 52, Mathematics 2A-B-C, and Mathematics 6A-B-C.

162 Formal Languages and Automata (4) W. 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. Prerequisite: ICS 161. Same as Linguistics 102.

165 Project in Algorithms and Data Structures (4) S. Design, implementation, execution, and analysis of algorithms for sorting, graph problems, and matrix manipulations. Time-space-structure trade-offs. Prerequisite: ICS 161.

171 Introduction to Artificial Intelligence (4) F, S. 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. Prerequisite: ICS 141.

172 Programming Techniques in Artificial Intelligence (4) W, S. The study of the language LISP and its derivatives, as used in problem-solving systems requiring simple recursion, procedural embedding of information, production-system control structures, pattern-directed function invocation, and a variety of access and control mechanisms. Prerequisite: ICS 171.

175A Project in Artificial Intelligence (4). Construction of a working artificial intelligence system. Evaluation of capabilities of the system

including impact of knowledge representation. Prerequisite: ICS 172. Formerly ICS 175.

175B Introduction to Expert Systems (4) S. Introduction to the methodology of design and implementation of expert systems. Laboratory work uses expert system shells to construct knowledge-based systems. Emphasis on techniques for representing and organizing domain and control knowledge as opposed to the theory and implementation of inference engines. Prerequisite: ICS 172. Formerly ICS 177.

180 Special Topics in Information and Computer Science (4) F, W, S. May be repeated for credit if title or topic varies. Prerequisites vary.

184 File and Database Management (4). Database system architecture—data structures, storage structures, and data languages. Alternate approaches to database management systems relational approach, hierarchical approach, network approach. Database security and integrity. Query processing. Prerequisite: ICS 52.

186 Computer Graphics (4) F, S. Interactive graphics software and hardware. Survey of interactive graphic design systems spanning a large family of disciplines. Each class member will generate an operational program demonstrating interactive graphics as a human-computer communication medium. Prerequisite: ICS 52.

196 Tutoring in ICS (2 to 4) F, W, S. Offers opportunities to tutor both on an individual, as needed basis and as part of regularly scheduled courses. Specific tutoring assignments depend on the courses with which the student is working, as determined by the instructor in charge. In most cases includes time in individual tutoring and a term paper or project. Course may be repeated for credit for a total of eight units. Pass/Not Pass Only.

197 Honors Seminar (2) F. An overview of computer science and selected recent trends in research. Students attend talks on current faculty research, with opportunities for discussion. Prerequisites: upper-division standing; participation in ICS Honors program.

198 Honors Research (4) F, W, S. Directed independent research in computer science. Required of participants in the ICS Honors Program. May be used to substitute for one of the project courses required for the ICS degree. Prerequisites: upper-division standing and completion of the lower-division writing requirement; participation in the ICS Honors program.

199 Individual Study (2 to 5) F, W, S

Graduate

211 Data Structures (4). An in-depth treatment of a variety of data structures and their associated management algorithms. Queues; stacks; arrays and their address mapping functions; list structures including garbage collection, compacting, copying and equality; trees, subtrees, free and binary trees, balanced trees, AVL trees, and the use of trees in sorting and searching; multilinked structures including storage allocation strategies; tables, hash codes, comparison of search methods; strings, encrypting, compression and minimal length encodings; files, records, file structures; and theories and formalisms for data description. Prerequisite: ICS 23 or equivalent.

213 Formal Semantics of Programming Languages (4). A survey of current approaches to the formal specification of the semantics of programming languages, including an introduction to and description of the merits of program verification. Areas covered will include operational, axiomatic, and denotational semantics and a comparison of these methods.

221 Computer Systems Architecture (4). Machine description languages including ISP, PMS, and graph models. Study of architectural issues and their relation to operating system functions: design of processor units, memory hierarchies and their management, microprogramming, and I/O. Prerequisites: ICS 143 and 152 (or equivalent).

222 Advanced Topics in Computer Architecture and Operating Systems (4). Machine organization and operating systems of advanced computer systems are studied. Emphasizes models of computation and computer architectures suitable to highly parallel processing. Systems studied include database machines, computer architectures for artificial intelligence, object-based systems (e.g., INTEL iAPEX 432), and reduced instruction set architectures (RISK). Future trends in computer systems architecture are discussed.

223 Computer Networks (4). Introduction to computer network—protocol architectures to performance. Discussion of various techniques to provide reliable communication among processes in distributed environments. Topics covered include layering protocol architectures, functions of each layer, packet switched networks, local networks, interprocess communication, internetworking. Examples from networks including ARPA network and X.25 public data networks. Prerequisite: consent of instructor.

224 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: ICS 151 or equivalent.

225 High-Performance Architectures and Their Compilers (4). A high-level systems course focusing on high-speed computation and on a variety of parallel architectures such as pipelined and vector machines. Emphasis on the development of automatic tools (i.e., compilers/environments) for the efficient exploitation of such machines, and the trade-offs between hardware and software in the design of supercomputing and parallel, high-performance machines. Prerequisites: senior-level courses in compiling, architecture, and familiarity with C and UNIX.

226 Design Description and Modeling (4). Introduction to the basic concepts of high-level model design. Overview of several design description languages and demonstration of how they can be used to model designs at different levels of abstraction. Examination of techniques and methodologies for simulating and testing of designs. Prerequisites: ICS 151 and 152, or consent of instructor.

227 Computer Design Synthesis (4). Methods, algorithms, and tools for design synthesis on different levels of design: layout, logic, register-transfer, behavioral, and system levels. Several assignments in the CAD laboratory include exploration of different synthesis algorithms using available design tools. Prerequisites: basic course in logic design and computer architecture such as ICS 152 or 221, or consent of instructor.

233 Analysis of Algorithms (4). Analysis of correctness and complexity of various efficient algorithms; discussion of problems for which no efficient solutions are known. Set manipulation, graph algorithms, matrix multiplication, fast Fourier transform, pattern matching, and NP-complete problems. Prerequisite: ICS 161 or equivalent.

234 Advanced Analysis of Algorithms (4). Analysis and design techniques for algorithms, particularly emphasizing randomness and parallelism. Coin-flipping algorithms, analysis of algorithms with assumptions about input distribution, simultaneous resource bounds and the class NC, parallel algorithms, P-complete problems, linear programming, lower bounds. Prerequisite: ICS 233 or equivalent.

236 Computational Geometry (4). An overview of some of the basic problems in computational geometry and of some algorithmic and data-structuring techniques appropriate to their solution. Prerequisites: ICS 161 and 211, or equivalent.

242 Knowledge Representation in Artificial Intelligence (4). Investigation of approaches to representation of knowledge for machine intelligence. Need for such knowledge as exhibited by examples of human behavior. Evaluation of current models and representations.

245A Software Engineering (4). Study of 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 principles of software engineering, requirements analysis, design, implementation, and project management.

245B Software Engineering (4). Study of concepts, methods, and tools for analysis, design, construction, and measurement of complex, software-intensive systems. Underlying principles emphasized. State-of-the-art and promising research areas covered, including software reliability, environments, and technology evaluation. Prerequisite: ICS 245A.

246 Computing Resource Management (4). Approaches to providing computing services in the context of large organizations. Determination of goals, selection of equipment, management of programming staff, coping with change, marketing services, keeping up with technology, pricing and other techniques for allocation of services, financing, vertical versus horizontal organizations.

Graduate-level seminars and workshops are not offered each year but are offered as student and faculty interests dictate.

250 Seminar in Programming Languages, Translators, and Systems (4)

251 Seminar in Artificial Intelligence (4)

252 Automata Theory (4). Advanced course in theory of finite automata and their relationship to formal languages and grammars. Formal analysis of various computational models including Finite State Acceptors, Push Down Acceptors, Turing Machines, and Random Access Machines. Topics include undecidability, computation complexity, and NP-completeness. Prerequisite: ICS 161 or equivalent.

258 Seminar in the Social and Economic Implication of Computers and Automation (4). Consists primarily of readings of a number of statements about computing's impact on individuals and organizations. Analyses of those statements and positions using techniques developed by UCI researchers.

260 Seminar in Natural Language Processing (4). A cognitive approach to the representations and processes underlying natural language understanding and generation. Representation topics include Conceptual Dependency theory, knowledge structures, scripts, plans, goals, MOPs. Process topics include conceptual analysis and its relation to parsing of formal (nonnatural) languages; inference generation and constraint; memory organization and retrieval; acquisition of knowledge; acquisition of language.

262 Seminar in Models of the Brain (4). Models of aspects of human and animal behavior, and theories of how those behaviors may arise from brain operation. How infant learning is affected and how both the learning and the operation of simple predictive and discriminatory behavior can be explained in terms of models that are compatible with relevant data from neurophysiology.

270 Workshop in Programming Languages, Translators, and Systems (4)

271 Introduction to Artificial Intelligence (4). Introduction to Artificial Intelligence (AI), the study of mental faculties through the use of computational models. Fundamental subdisciplines of AI including knowledge representation, search, deduction, planning, natural language parsing and comprehension, knowledge-based (expert) systems, and learning.

272 Advanced Artificial Intelligence Programming (4). Study of a set of common techniques that reappear in many artificial intelligence projects such as planning, natural language processing, learning, expert systems, and model-based reasoning. Prerequisites: ICS 172 and 271 (may be taken concurrently) or consent of instructor.

275 Machine Learning (4). Computational approaches to learning. Covers methods for concept formation, learning search heuristics, language acquisition, and machine discovery, among others. Participants should be familiar with heuristic search techniques and fluent in the LISP programming language. Prerequisite: ICS 271.

280 Special Topics in Information and Computer Science (4) F, W, S

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.

291 Directed Research (4)

295 Colloquia-Orientation (2) F. Graduate orientation program and colloquium series. Required of all Phase I Ph.D. students. Satisfactory/Unsatisfactory Only.

298 Thesis Supervision (2 to 12). Individual research or investigation conducted in preparation for the dissertation requirements for the Ph.D.

299 Individual Study (2 to 12). Individual research or investigation under the direction of an individual faculty member.

398 Teaching Assistant Training Seminar (2) F. Theories, methods, and resources for teaching computer science at the university level, particularly by teaching assistants. Course organization, designing examinations and projects, grading, motivating students. Participants give and critique presentations and are videotaped while teaching. Satisfactory/Unsatisfactory Only.

399 University Teaching (4). Involves on-the-job experience for Teaching Assistants. Limited to and required of Teaching Assistants.

Program in Social Ecology

Daniel Stokols, **Director**

163 Social Ecology

Undergraduate Counseling: (714) 856-6861

Graduate Counseling: (714) 856-5917

Faculty

Hoda Anton-Culver, Ph.D. St. Andrews University (Scotland), *Associate Professor of Medicine and of Social Ecology*

Hana Ayala, Ph.D. J.E. Purkyne University (Czechoslovakia), *Assistant Professor of Social Ecology* (landscape ecology, international environmental management)

Mark Baldassare, Ph.D. University of California, Berkeley, *Professor of Social Ecology* (urban sociology, public opinion research, social impact assessment)

Arnold Binder, Ph.D. Stanford University, *Professor of Social Ecology and Psychiatry and Human Behavior* (research methodology, juvenile delinquency, police organization and methods)

Arthur S. Boughey, Ph.D. Edinburgh University, *Professor Emeritus of Social Ecology*

Kitty C. Calavita, Ph.D. University of Delaware, *Assistant Professor of Social Ecology* (sociology of law, criminology, social deviance, immigration, and inequality)

Kenneth S. Chew, Ph.D. University of California, Berkeley, *Assistant Professor of Social Ecology* (social demography, urban sociology, family and life course studies)

K. Alison Clarke-Stewart, Ph.D. Yale University, *Professor of Social Ecology* (development in early childhood and the effects of variation in the social environment)

Ross F. Conner, Ph.D. Northwestern University, *Associate Professor of Social Ecology* (evaluation research and social psychology, health promotion)

Randall Crane, Ph.D. Massachusetts Institute of Technology, *Assistant Professor of Social Ecology* (urban planning, public policy)

Thomas J. Crawford, Ph.D. Harvard University, *Associate Professor of Social Ecology and Psychiatry and Human Behavior* (attitude theory and social problems research)

T. Timothy Crocker, M.D. University of California, San Francisco, *Professor Emeritus of Community and Environmental Medicine and of Social Ecology* (clinical and experimental environmental medicine)

Joseph F. DiMento, Ph.D., J.D. University of Michigan, *Director of Land Management and Professor of Social Ecology and of Management* (planning, land use and environmental law, use of social science in policy making, legal control of corporate behavior)

John D. Dombrink, Ph.D. University of California, Berkeley, *Associate Professor of Social Ecology* (crime and criminal justice, deviance and social control)

C. David Dooley, Ph.D. University of California, Los Angeles, *Associate Director of Undergraduate Studies, Program in Social Ecology, and Professor of Social Ecology* (community psychology, epidemiology, economic change)

Kenneth W. Dumars, M.D. University of Colorado, *Professor of Pediatrics, Physical Medicine and Rehabilitation, and Social Ecology* (etiology of chromosome nondisjunction, genetic counseling, longitudinal cytogenetic study of myeloproliferative disorders)

Jonathon E. Ericson, Ph.D. University of California, Los Angeles, *Associate Professor of Social Ecology* (archaeological chemistry, environmental quality and health, earth sciences)

Gary W. Evans, Ph.D. University of Massachusetts, *Professor of Social Ecology* (human stress, environmental cognition, and research methodology)

Robert H. Friis, Ph.D. Columbia University, *Associate Clinical Professor, Primary Care, and Social Ecology* (psychology and sociology of health and illness)

Gilbert L. Geis, Ph.D. University of Wisconsin, *Professor Emeritus of Social Ecology* (crime and criminal justice)

Wendy A. Goldberg, Ph.D. University of Michigan, *Associate Professor of Social Ecology* (developmental psychology, children and their families, transition to parenthood, social policy)

Louis A. Gottschalk, M.D. Washington University Medical School, *Professor of Psychiatry and Human Behavior and Social Ecology* (psychiatric consultation with medical and surgical patients, psycho-

somatic medicine, psychopharmacology, development of measurement methods of assessing psychological states and traits, psychoanalysis)

Ellen Greenberger, Ph.D. Harvard University, *Professor of Social Ecology* (developmental psychology, adolescence and social institutions, work and the family, social policy)

Paul D. Jesilow, Ph.D. University of California, Irvine, *Assistant Professor of Social Ecology* (crime and criminal justice)

Michael Kleinman, Ph.D. New York University, *Associate Professor of Community Health and Environmental Medicine and of Social Ecology in Residence* (air pollution health effects)

Salvatore R. Maddi, Ph.D. Harvard University, *Professor of Social Ecology* (personality, psychopathology, health psychology, creativity)

Sanjoy Mazumdar, Ph.D. Massachusetts Institute of Technology, *Assistant Professor of Social Ecology* (environmental studies and design, organizational analysis, management and planning, and social and behavioral aspects of architecture)

Richard McCleary, Ph.D. Northwestern University, *Professor of Social Ecology* (criminal justice, research methodology, statistics)

James W. Meeker, Ph.D., J.D. State University of New York, Buffalo, *Associate Professor of Social Ecology* (sociology of law, criminal justice, research methodology, statistics)

Raymond W. Novaco, Ph.D. Indiana University, *Associate Professor of Social Ecology* (human stress, aggression, community psychology)

Betty H. Olson, Ph.D. University of California, Berkeley, *Professor of Social Ecology, Civil Engineering, and Environmental Toxicology* (aquatic microbiology, environmental health and molecular biology, water resources)

Henry N. Pontell, Ph.D. State University of New York, Stony Brook, *Associate Dean of Graduate Studies and Associate Professor of Social Ecology and of Social Sciences* (criminal justice, sociology of law, medical sociology)

Karen S. Rook, Ph.D. University of California, Los Angeles, *Director of Graduate Studies, Program in Social Ecology, and Professor of Social Ecology and Physical Medicine and Rehabilitation* (gerontology, social support systems, subjective well-being and health)

Danching Ruan, M.A. Columbia University, *Acting Assistant Professor of Social Ecology* (sociology of gender, family relationships, social stratification and mental health)

Benson Schaffer, J.D. Southwestern University School of Law, *Lecturer in Social Ecology* (criminal justice and family law)

Deane H. Shapiro, Jr., Ph.D. Stanford University, *Associate Professor of Psychiatry and Human Behavior, and Social Ecology in Residence* (stress management, self control, and behavioral medicine)

Roxane Cohen Silver, Ph.D. Northwestern University, *Assistant Professor of Social Ecology* (stress and coping, social psychology, health psychology)

Daniel Stokols, Ph.D. University of North Carolina, *Director of the Program in Social Ecology and Professor of Social Ecology and of Management* (health impacts of environmental stressors, environmental design and social behavior)

Luis Suarez-Villa, Ph.D. Cornell University, *Associate Professor of Social Ecology* (planning and public policy, regional science, international and regional development)

William C. Thompson, Ph.D. Stanford University, J.D. University of California, Berkeley, *Associate Professor of Social Ecology* (psychology and law, criminal justice, human judgment and decision making, use of social science in appellate litigation)

Elaine Vaughan, Ph.D. Stanford University, *Assistant Professor of Social Ecology* (environmental assessment, risk perceptions, research methodology, social psychology)

Alladi Venkatesh, Ph.D. Syracuse University, *Associate Professor of Management and Social Ecology* (environmental analysis and design)

Bryan Vila, Ph.D. University of California, Davis, *Assistant Professor of Social Ecology* (ecological criminology, juvenile delinquency, police organizations)

Carol K. Whalen, Ph.D. University of California, Los Angeles, *Professor of Social Ecology and of Psychiatry and Human Behavior* (developmental psychopathology, childhood behavior disorders, child therapies, health psychology)

John M. Whiteley, Ed.D. Harvard University, *Professor of Social Ecology* (moral development, late adolescent to early adult development, social ecology of peace)



Betty H. Olson, Professor of Social Ecology, Civil Engineering, and Environmental Toxicology, studies microbes taken from a soil sample exposed to environmental pollutants. The goal of this research is to enhance the natural pollutant-degrading capacity of bacteria at the molecular level.

The Program in Social Ecology is an interdisciplinary academic unit spanning the environmental, legal, behavioral, and health sciences. The Program is comprised of nearly 40 full-time faculty, 1,140 undergraduate majors, and 90 graduate students. Social ecology applies scientific methods to the study of a wide range of recurring social and environmental problems. Among issues of long-standing interest in the Program are crime and justice in society, social influences on human development over the life cycle, and effects of the physical environment on health and behavior. The Program maintains a central interest in human adaptation and a special, but not exclusive, interest in the study of events in the natural settings in which they occur.

The faculty is *multidisciplinary*. It includes psychologists with a variety of specialties (e.g., developmental, clinical, social, and environmental psychology), sociologists, program evaluators, criminologists, lawyers, urban and regional planners, environmental health scientists, and environmental design specialists. While faculty members are firmly grounded in these parent disciplines and teach basic courses in them, they concentrate their efforts on teaching and research with a problem orientation. In these problem-oriented courses, they integrate concepts and perspectives of several disciplines. This focus arises from commitment to the view that the analysis of complex societal problems requires *interdisciplinary* efforts (i.e., the joining of talents by people with different intellectual backgrounds). A number of social ecologists are involved in interventions directed toward improving the way groups of individuals, institutions, and communities function; a number of others are involved in interventions aimed at improving the quality and control of the environment.

Research Facilities

The Social Ecology Building features several facilities for experimental research, including wet laboratories for research and teaching in the environmental health sciences; behavioral assessment laboratories for research in human development, social relations, and legal studies; and an environmental simulation laboratory for studying the effects of environmental conditions. The wet laboratories are used for studying air and water pollution. The behavioral assessment laboratories are used for studying social phenomena such as parent-child interaction, cooperation among children, hyperactivity, social support processes, and mock jury discussions. The environmental simulation laboratory permits full-scale, realistic simulations of interior environments such as offices, classrooms, and apartments. Within these settings, physical conditions (e.g., ambient lighting and color patterns, music and noise, spatial arrangements and physical density) and social processes (e.g., group communication patterns) can be varied experimentally so that researchers can assess the separate and joint effects of these conditions and processes upon occupants' performance and well-being.

Degrees

Social EcologyB.A., M.A., Ph.D.
Applied Ecology (offered jointly
with the School of Biological Sciences).....B.A.
Urban and Regional PlanningM.U.R.P.

Honors

Honors at graduation will be awarded to about 12 percent of the graduating seniors. Initial eligibility for such honors will be on the basis of grade point average. 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. 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 Director for Undergraduate Studies.

Honors Program in Social Ecology

The Social Ecology Honors Program provides the opportunity for selected students majoring in Social Ecology to pursue advanced independent study. Admission to the program is based on formal application normally submitted in the spring quarter of the 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. Invitation to the program is based upon evidence of the student's ability, interest in research, and proposed thesis project. Successful completion of the program requires two quarters of supervised, independent work on a thesis research project (Social Ecology H190A-B) and written and oral presentation of an honors thesis (Social Ecology H190C).

Undergraduate Program in Social Ecology

The Social Ecology major offers either a general interdisciplinary degree in Social Ecology or a more focused experience through one of three specializations: Environmental Analysis and Design; Criminology, Law and Society; and Psychology and Social Behavior. The specialization designation is noted on the student's transcript upon graduation.

A minor in Social Ecology is offered for students who wish to be exposed to an interdisciplinary, scientific orientation toward environmental, social, and criminal justice problems while pursuing another major. The Social Ecology faculty believes that an exposure to the components of the Program's curriculum is valuable to the educated individual. Program components include an integrative theoretical framework, an understanding of the research world, and familiarity with the use of scientific information in problem solving and policy making.

Career Opportunities

Graduates of the Program in Social Ecology bring a distinctive cross-disciplinary perspective to the job market. The Program 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. Many Social Ecology students find that their interdisciplinary training is also useful for careers in management.

The Program also provides sound preparation for students who wish to apply to graduate and professional schools of law, administration, public health, social welfare, psychology, sociology, criminology, and urban planning.

The Career Planning and Placement Center provides services to UCI 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 Planning and Placement Center section.

Field Study

An important aspect of the undergraduate program is its field study requirement for majors. Field study is open *only* to upper-division Social Ecology majors. Field study is designed to provide students with an opportunity to examine 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; UCI Medical Center; California Department of Transportation; American Red Cross; primary and secondary schools; Fairview Development Center; planning, legal, and design corporations). All field studies are taken on a Pass/Not Pass basis and require Departmental approval. Further information on field study, including information about sign-up procedures and prerequisites, must be obtained from the Social Ecology Counseling Office.

Specialization in Environmental Analysis and Design

The Environmental Analysis and Design specialization is concerned with the interactions between the physical environment and human health and behavior. Students begin with basic courses in human ecology, environmental quality, environmental psychology, urban sociology, and planning and public policy. Subsequent course work moves toward problem-oriented courses in these areas, enriched by ongoing faculty and student research on such topics as the effects of environmental stressors (e.g., crowding, smog, noise); environmental pollution; the biology and politics of water pollution; potential impacts of natural disasters; compliance with environmental regulations; the way in which economic changes in a community affect the health and well-being of its residents; the effects of stress on health; causes and consequences of urbanization and population change; and risk assessment.

In addition to providing basic knowledge for students in other areas, courses are relevant to professional careers in the areas of administration, environmental quality and health, environmental impact assessment, and community environmental education. Graduate and professional opportunities related to environmental analysis include urban and regional planning, architecture, environmental psychology, ecology, public health, and urban sociology. Special emphasis is placed upon the roles of individual citizens and community organizations, both governmental and private, in maintaining and enhancing the quality of the human environment. Field study is done in city planning departments, private architectural firms, environmental information centers, pollution control agencies, and health agencies.

Specialization Requirements

Following the completion of Social Ecology E8 (Introduction to Environmental Analysis), students are required to complete four courses (chosen from among a list of nine) in the upper-division core. In addition, six upper-division specialty courses are required. Students may choose any combination of six courses from the specialty areas of Design, Planning, and Environmental Health Science. It is strongly recommended that students complete upper-division core courses before beginning work on specialty area courses.

Lower-Division Core

E8 Introduction to Environmental Analysis

Upper-Division Core

E101 Environmental and Public Health Policy
E102 Cultural Ecology and Environmental Design
E103 Topics in Applied Ecology
E104 Urban Sociology
E105 Environmental Law
E106 Human Ecology
E107 Urban and Regional Planning
E108 Environmental Psychology
E109 Urban Public Policy

Upper-Division Specialty Areas

Design

E120 Elements of Environmental Design
E121 Living in Space
E122 Environment and Health
E123 Advanced Environmental Psychology: Facilities Design for the Workplace
E124 Environmental Design Research Methods
E125 Environmental Programming
E126 Environmental Design for International Tourism
E127 International Environmental Management
E128 Design and Behavior

Planning

E140 Survey Analysis of Urban Residents
E141 Urban and Regional Analysis
E142 Environmental Geology and Ecology for Land-Use Planning
E142L Laboratory for Environmental Science and Land-Use Planning
E143 Social Ecology of the Borderlands
E144 Urbanization and Social Change
E145 Environmental Impact Studies
E146 Dynamics of Human Populations

Environmental Health Science

S110 Human Stress
E160 Microbial Ecology of Natural and Polluted Waters
E160L Microbial Ecology of Natural and Polluted Waters Laboratory
E161 Chemistry for Environmental Engineering
E162 Chemical Components of Water Quality
E163 Chronological Dating Techniques for Environmental Reconstruction
E164 Environmental Chemistry
E166 Strategies of Health Promotion
E168 Community Health: An Epidemiological Approach
E169A Seminar in Applied Ecology I
E169B Seminar in Applied Ecology II

Specialization in Psychology and Social Behavior

The Psychology and Social Behavior specialization is concerned with human behavior in social contexts. A major objective is to study variations in social environments (e.g., the family, school, workplace) that affect human behavior over the life cycle. Students begin with basic course work in developmental, social, and abnormal psychology. Subsequent course work examines a variety of topics pertinent to the fields of community, abnormal, developmental, environmental, clinical, and health psychology, and the psychological study of social problems. Sample courses cover psychosocial development in children, adolescents, and adults; gerontology, childhood behavior disorders and developmental psychopathology; sex differences; attitude change; social psychology; psychosocial influences on health; psychology and the law; stress and coping; counseling and therapy. Opportunities also are available to work with faculty on research in these and other areas.

Students are given a foundation that will enable them to work after graduation from UCI in the private or public sectors or to do graduate work in psychology, human development, health services, social work, counseling, or education. Approximately 50 agencies are available for field study in this specialization, including schools, child care facilities, community clinics, counseling centers, hospital settings, and social service agencies.

Students should be aware that psychology courses are offered in several different departments and programs. Students interested in

developmental, clinical, environmental, health, or social psychology, or in psychology and the law, are advised to consult the course listings in the Program in Social Ecology section. Students interested in human experimental psychology as applied to the study of sensation, perception, learning, and cognitive processes are advised to consult the course listings in the Department of Cognitive Sciences in the School of Social Sciences section. Students interested in the biological mechanisms of behavior are advised to consult the course listings in the School of Biological Sciences section.

Specialization Requirements

Following the completion of S9 (Introduction to Human Behavior), students must complete six upper-division courses from among the following. Listed courses are arranged in course groupings that represent the major areas of psychology within the Program in Social Ecology: Developmental Psychology, Environmental Psychology, Social Psychology, Clinical Psychology, Health Psychology, and Psychology and Social Problems.

Developmental Psychology

- S113 Infant Development
- S122 Human Sexuality
- S123 Adolescent Development
- S125 Special Topics in Adult Development
- S127 Child Development
- S132 Gerontology
- S145 Perspectives on Child Rearing
- S148 Development of Sex Differences

Environmental Psychology

- E108 Environmental Psychology
- E123 Advanced Environmental Psychology: Facilities Design for the Workplace
- E124 Environmental Design Research Methods
- E128 Design and Behavior

Social Psychology

- S117 Social Relationships
 - S118 Interviewing and Assessment
 - J133 Deviance
 - S136 Intimate Relationships
 - S138 Attitude Organization and Change
 - E140 Survey Analysis of Urban Residents
 - S143 Attitudes and Behavior
 - S159 The Family
 - 166D Introduction to Survey Analysis
 - S181 Leadership
 - S187 The Social Animal
 - S188 Social Psychology
- Strongly recommended: S86 Introduction to Social Psychology

Clinical Psychology

- S101A-B Counseling Theory
- S104 Behavioral Assessment
- S105 Developmental Disabilities
- S106 Clinical Child Psychology
- S107 Child Therapies
- S109 Cognitive Behavior Therapy
- S111 Abnormal Behavior
- S116 Peer Counseling
- S151 Developmental Psychopathology
- S156 Introduction to Clinical Psychology
- S166 Behavior Modification
- S170 Personality

Health Psychology

- S110 Human Stress
- S150 Child Health Psychology
- S160 Advanced Seminar: Human Stress
- E168 Community Health: An Epidemiological Approach



Field study is designed to provide students with an opportunity to examine social-environmental problems in community settings.

- S173 Behavioral Medicine

- S186 Sports Psychology

Psychology and Social Problems

- S108 Social Ecology of Child Abuse and Neglect
- S120 Violence in Society
- J132 Juvenile Delinquency
- J133 Deviance
- S154 Work and the Family
- S161 Family Law
- S165 Sociology of Mental Health and Illness
- S171 Social Conflict
- S177 International Cooperation
- S178 Social Ecology of Peace I
- S184 Community Psychology
- S185 Impacts of Divorce
- J190 Psychology and the Law

Strongly recommended courses for students who anticipate pursuing graduate study in psychology:

Biological Sciences 79, 80, 81 (Biological Bases of Behavior); Social Ecology 166A-B-C (Social Science Statistics I, II, III); Psychology 112A-B-C (Experimental Psychology), 140L (Learning Theory), and 146A (Human Memory).

Specialization in Criminology, Law and Society

The specialization in Criminology, Law and Society focuses, first, on the manifestations of criminal behavior and the methods for controlling that behavior, and second, on the relationships and interactions between social processes and legal systems. Basic courses present overviews of American legal systems with

particular emphasis on criminal and juvenile justice, the 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 understanding of the theoretical structures used to explain criminal behavior, the effects of crimes from the perspectives of victims, the operations of systems of justice and their underlying institutions, the goals of governmental regulation and the methods used to achieve those goals, and more advanced issues in the interactions of law and such fields as psychology, sociology, and planning. In addition, substantive areas of law, such as criminal, environmental, and family law, are introduced.

This specialization provides students 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 the 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 educations 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.

Field study placements are available in police departments, public defenders' offices, probation and parole agencies, consumer affairs agencies, the State juvenile detention system, the Orange County Victim/Witness Assistance Program, juvenile shelters, the Orange County Legal Services Program, the UCI College Legal Clinic, and in private legal firms.

Specialization Requirements

Following the completion of J4 (Introduction to Criminal Justice), students must complete six of the following courses:

- J101 Civil Legal System
- E105 Environmental Law
- S108 The Social Ecology of Child Abuse and Neglect
- J110 Homicide and Suicide
- J114 Organized Crime and American Society
- J115 Federal Law Enforcement
- J120 Law and Inequality
- S120 Violence in Society
- J121 Sociology of Law
- J132 Juvenile Delinquency
- J133 Deviance
- J134 Victimless Crimes
- J136 Constitutional Law
- J137 Criminal Procedure
- J138 Victims of Crime
- J140 Prisons, Punishment, and Corrections
- J141 Seminar in Criminal Justice
- J142 White Collar Crime
- J143 Theories of Punishment
- J144 Criminal Law
- J145 Government Crime
- J146 Social Control of Violence
- J147 Law and Social Change
- J148 Criminological Theory
- J150 The Legal Profession
- S161 Family Law
- J164 Social Control of Delinquency
- J181 Contemporary Legal Issues
- J182 Legal Sanctions and Social Control
- J190 Psychology and the Law

The following courses are especially recommended to students who desire exposure to legal reasoning and analysis in order to help decide whether to pursue a career in law, and to students who wish to learn how to "think like a lawyer": J80, J101, E105, J144, J147, S161, J181, J190. These courses are taught by members of the Social Ecology faculty who are lawyers.

Requirements for the Bachelor's Degree in Social Ecology

University Requirements: See pages 50–53.

Social Ecology Major Requirements

Lower-Division Requirements

Social Ecology 10 (Research Design); 13 (Statistical Analysis in Social Ecology); J4 (Introduction to Criminal Justice); E8 (Introduction to Environmental Analysis); and S9 (Introduction to Human Behavior).

Upper-Division Requirements

Ten upper-division Social Ecology courses (numbered 100–193), 194 (Studies in Field Settings); two quarters (eight units) of 195 (Field Study) taken during junior and senior years. Students must complete required prerequisite courses prior to field study enrollments; open only to Social Ecology majors.

In order to remain in good standing and be eligible for graduation from the Program in Social Ecology, a student must maintain a minimum grade point average of 2.0 in all required lower-division Social Ecology courses (10, 13, J4, E8, S9) and also in the 10 required Social Ecology upper-division courses (100–193) plus 194.

Planning a Program of Study

Students who major in Social Ecology, although they may be specializing in a single area of interest, are encouraged to develop an appreciation of a wide array of person-environment problems. The strongest program of study also includes basic course work in at least one of the social, biological, or physical sciences. Students who enter the major as freshmen should plan to complete the required lower-division courses by the end of the junior year. Transfer students and students who declare a major in Social Ecology after entering UCI should work with the Social Ecology Counseling Office to develop a plan for meeting the requirements of the major in an orderly fashion.

The Social Ecology Counseling Office is prepared to help all students in planning a program of study. Contact with this Office is important so that students will develop a broad, yet coherent, series of courses. Students who expect to pursue graduate study should consult also with appropriate faculty members to ensure proper preparation.

Undergraduate Major in Applied Ecology

The Program in Social Ecology and the School of Biological Sciences offer a program of undergraduate instruction leading to a B.A. degree in Applied Ecology. The interdisciplinary curriculum furnishes a strong undergraduate foundation for students interested in advanced study in environmental planning and resource management.

An Applied Ecology major receives the basic science training of a Biological Sciences major and utilizes these skills in a core of environmentally based courses taught in Social Ecology. Social Ecology brings to this major a unique combination of courses in Environmental Quality and Health, Planning and Public Policy, and Law and Society. This combination, together with a strong biology background contributed by the School of Biological Sciences and a general science background contributed by the School of Physical Sciences, enables students selecting this major

to pursue interdisciplinary learning experiences which are difficult to achieve within traditional disciplines. The first three years of the major are very structured, leaving the last year open for students to specialize in an area of their choice.

Careers in Applied Ecology

Careers in the fields of environmental and resource management and planning are particularly suited to an Applied Ecology background. Many graduates hold technical or administrative positions in, for example, the United States Environmental Protection Agency; or in California's Regional Water Quality Control Board, Air Resources Board, Department of Fish and Game, and Department of Health and Human Services; or in various county and city agencies. A variety of firms in the private sector employ Applied Ecology graduates to prepare environmental impact reports, laboratory analyses, and planning studies. Industrial health professionals are in demand to help determine the safety of workplace environments for the labor force. The Applied Ecology major also provides a strong academic foundation for graduate or professional study in areas such as conservation and natural resources, environmental health science, microbiology, public health, law, planning, and administration.

The Applied Ecology major provides students with a comprehensive treatment of basic ecological principles and their relevance to human needs. As an alternate pathway, students with an engineering perspective are encouraged to explore the program options in Environmental Engineering offered by the School of Engineering. Also, students are encouraged to explore the concentration in Ecology and Environmental Biology, leading to a B.S. degree in Biological Sciences, offered by the School of Biological Sciences.

Requirements for the Bachelor's Degree in Applied Ecology

University Requirements: See pages 50–53; the Applied Ecology degree combines breadth and major requirements.

Applied Ecology Requirements

All of the Applied Ecology requirements must be taken for a grade (except field study). Students must maintain a minimum grade point average of 2.0 in Applied Ecology lower- and upper-division courses, as well as a grade point average of 2.0 in all courses taken at UCI.

Each student must fulfill the following general, field study, and elective requirements:

General: Mathematics 2A, 2B, and either Mathematics 2C or 7; For those intending to do field study: Social Ecology 10 also is required. Humanities 1A, 1B, 1C (lectures and discussions), plus any course approved to meet the upper-division writing requirement.

Physics 3A-B, 3LA-LB, or Physics 5A-B, 5LB.

Chemistry 1A-B-C, 1LB-LC, 51A, 51LA, and 51B, 51LB.

Economics 1.

Biological Sciences 90; 101; 102; 103 and 103L or 104 and 104L; 106; 106L; and 166.

Social Ecology E5, E8; and E103 or E106.

Field Study: Social Ecology 194 and one quarter of 195; or two quarters of Special Studies (199) sponsored by a faculty member in one of the focused areas below.

Elective: No fewer than three, and preferably, six courses in one of the following focused areas. Students should note that some courses below have prerequisites.

Resource Management-Aquatic Environments: Biological Sciences 120, 179, 181; Social Ecology E160, E162, E163, E164, E169A, E169B.

Resource Management-Terrestrial Environments: Biological Sciences 120, 173, 174, 184, 186, 187; Social Ecology E142, E142L, E163, E164, E169A, E169B.

Water Pollution: Biological Sciences 122, 127; Social Ecology E160, E160L, E162, E168, E169A, E169B.

Industrial Hygiene and Occupational Health: Biological Sciences 173; Engineering ME164, ME264; Social Ecology E162, E164, E168.

Environmental Health Sciences: Biological Sciences 173; Social Ecology E164, E168, E169A, E169B.

Environmental Law and Planning: Social Ecology E103, E105, E106, E141, E162, E169A, E169B.

Planning a Program of Study

It is important that students take the required science courses early, in order that the science background may be utilized in the Social Ecology courses. There are many required courses, and the student must plan carefully. For initial academic advising, students should consult the Social Ecology Counseling Office (163 Social Ecology Building) or the Biological Sciences Student Affairs Office. Faculty academic advisors may be either Social Ecology or Biological Sciences faculty members.

Undergraduate Minor in Social Ecology

Social Ecology Minor Requirements

Lower-Division Requirements

J4 Introduction to Criminal Justice

E8 Introduction to Environmental Analysis

S9 Introduction to Human Behavior

Upper-Division Requirements

Students must complete five upper-division courses selected from Social Ecology courses numbered 100–193 all within one specialization (Environmental Analysis and Design; Criminology, Law and Society; Psychology and Social Behavior).

Additional Curricular Options

Social Ecology majors may combine their course work with the following University programs and should consult an academic counselor for further information.

Education

Students who plan to obtain a teaching credential or a higher degree in the field of education should consult with counselors in the Office of Teacher Education early in their college career. Students completing a B.A. in Social Ecology may qualify for a waiver of the Single Subject Credential Examination. Social Ecology courses that are relevant to a career in education include: S9, S11, S101A-B, S104, S106, S107, S122, S127, S161, S166, E5, E6, E108, E168, J80, J101, J132. For additional information about teaching credentials, refer to the Teacher Education section.

The 3-2 Program with the Graduate School of Management

Outstanding Social Ecology majors who are interested in a career in management may wish to apply for entry into the Graduate School of Management's 3-2 Program. Students normally apply for this program early in their junior year. See the Graduate School of Management section for additional information.

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 more than 85 host universities and colleges in 33 countries throughout the world. Additional information is available in the Education Abroad Program section.

Minor in Global Peace and Conflict Studies

734 Social Science Tower; (714) 856-6410
Keith Nelson, **Director**

Faculty

Dennis Aigner, Graduate School of Management
Peter Bowler, School of Biological Sciences
Russell Dalton, School of Social Sciences
Joseph DiMento, Program in Social Ecology
John Graham, Graduate School of Management
Lawrence Howard, School of Social Sciences
Karl Hufbauer, School of Humanities
Jon Jacobson, School of Humanities
Gregory Kavka, School of Humanities
Jon Lawrence, School of Physical Sciences
Sung-Chull Lee, School of Social Sciences
Franklin Long, School of Social Sciences
and Program in Social Ecology
Herbert Lehnert, School of Humanities
Guy de Mallac, School of Humanities
Julius Margolis, School of Social Sciences
Richard McCleary, Program in Social Ecology
Calvin McLaughlin, School of Biological Sciences
Seymour Menton, School of Humanities
Keith Nelson, School of Humanities
Riley Newman, School of Physical Sciences
Margot Norris, School of Humanities
Frederick Reines, School of Physical Sciences
Shawn Rosenberg, School of Social Sciences
Sherwood Rowland, School of Physical Sciences
Roland Schinzinger, School of Engineering
Caesar Sereseres, School of Social Sciences
Robert Scheer, School of Social Sciences
and Program in Social Ecology
Etel Solingen, School of Social Sciences
Rein Taagepera, School of Social Sciences
John Whiteley, Program in Social Ecology

The minor in Global Peace and Conflict Studies is an interdisciplinary curriculum which addresses international violence; the threat of global war; and paths to world-wide cooperation in meeting military, economic, and environmental threats to global security. The minor is available through the Program in Social Ecology, the School of Social Sciences, and the School of Humanities. The minor and its courses, however, are open to all UCI students.

Participants in the minor must complete the equivalent of ten courses, beginning in the sophomore year with an introductory series and culminating with the senior Peace and Conflict Seminar. The student selects the remainder of the courses comprising the minor from an approved list of upper-division courses and must organize these choices in consultation with a panel of the participating faculty into a coherent interdisciplinary program complementary to the student's major.

Requirements for the Minor:

Four lower-division courses: History 11 (Introduction to Peace and Conflict), Political Science 41A (Introduction to International Relations), Political Science 42A (Nuclear Arms and Global Conflicts), Physics 16 (Physics of Global Issues).

Four relevant upper-division courses: Among those usually offered are: Economics 148A-B (Political Economy of National Defense); History 133A-B-C (European International History), History 146B (American Foreign Relations Since World War II), History 195 (Arms Control Simulation); Philosophy 182 (Issues in Social Philosophy); Political Science 142A (U.S. Foreign Policy: The Cold War Years), Political Science 142B (U.S. Foreign Policy: National Security Decision Making), Political Science 143C (Arms Control and International Security), Political Science 143D (Global Security and Cooperation), Political Science 152D-E (Soviet Society and Politics); Social Ecology S178, S179, S180 (Social Ecology of Peace); and Sociology 178 (Sociology of Peace and War).

(With approval of the Global Peace and Conflict Studies faculty, a relevant lower-division course may be substituted for one of the upper-division courses.)

The Senior Seminar on Peace and Conflict: Social Ecology E185A-B-C (same as Social Sciences 184A-B-C and Humanities 181A-B-C). Students attend and subsequently discuss weekly forum talks given by scholars from a variety of institutions on topics related to peace, conflict, and global cooperation. In the first two quarters of this sequence students prepare for a research paper to be written in the third quarter, which confers upper-division writing credit. The three quarters of the Seminar sequence carry respectively, two, two, and four units of credit.

Further information concerning the minor is available in the Global Peace and Conflict Studies Office.

Graduate Program in Social Ecology

The graduate program in 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 researched from the complementary perspectives of a multidisciplinary faculty that includes specialists in environmental, social, developmental, clinical, and health psychology; planning and architecture; urban sociology; law; criminology; and environmental health. Graduate education emphasizes this multidisciplinary orientation rather than the focused perspective of a single discipline. Ph.D. degree students may elect to pursue a general course of graduate study in the principles and methods of social ecology, or they may elect to pursue the Ph.D. in Social Ecology with a specialized course of study in one of four concentrations: Environmental Analysis and Design; Criminology, Law and Society; Health Psychology; and Human Development. M.A. degree students may pursue a general course of study or specialized training through a concentration in Facility Planning and Management. In addition, a program leading to a Master in Urban and Regional Planning also is available.

Social Ecology faculty members apply diverse methods of scientific inquiry to social and environmental problems. Evaluation research, legal research, questionnaire and survey methods, field research, naturalistic observation, and quasi-experimental techniques receive equal emphasis with laboratory experimentation. Collaborative research with faculty members is an important component of graduate education in the Program.

A sampling of faculty research and teaching interests includes human stress, psychosocial aspects of physical and emotional health, program evaluation, economic change and behavioral disorders, atypical child development, use of deadly force by police, legal sanctions and deterrence, white-collar and organized crime, effects of the physical environment on social behavior and health, childbearing decisions, personality and psychopathology, effects of social environments on early child development, urban

decentralization, community studies, social support systems among the elderly, water quality, air quality, the use of scientific information in public policy formation, the performance and health impacts of work environments, and environmental regulatory processes.

Admission

The Program offers graduate education leading to the Master of Arts and Doctor of Philosophy degrees in Social Ecology. Individuals desiring a Ph.D. degree should apply directly to the Ph.D. program. Applicants may apply either for the general course of graduate study in social ecological principles and methods or for a specialized course of study in one of the four concentrations. All applicants should submit a formal application before January 1 and undergraduate transcripts, three letters of recommendation, and Graduate Record Examination (GRE) General Test scores before February 1. Additional information is available from the Social Ecology Graduate Counselor; telephone (714) 856-5917.

Career Opportunities

Graduates of the M.A. and Ph.D. programs enjoy a wide variety of career opportunities and have succeeded in obtaining positions in academic institutions such as Stanford University; Rutgers State University of New Jersey; The Johns Hopkins University; University of California, Los Angeles; University of California, San Diego; the University of Oregon; the University of Wisconsin; Indiana University; and the 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 the National Institutes of Health, the Toronto Department of Public Health, The United Cerebral Palsy Foundation, The Philadelphia Geriatric Center, The New Mexico Tumor Registry, Orange County Superior Court, Southern California Metropolitan Water District, and in marketing and research firms such as the Yankelovich Group.

M.A. Program

The Master's program offers advanced training that prepares students for a variety of positions. Many recent M.A. graduates are now employed in federal, state, county, city, and private agencies in such areas as planning, mental health and welfare, and probation and parole. In addition, a number of students with the Master's degree in Social Ecology have entered Ph.D. programs at other universities.

Each incoming Master's degree student is assigned a faculty advisor with whom the student discusses an individual program of education. The program leading to the M.A. degree requires a thesis and satisfactory completion of seven approved courses (28 units), including the Seminar in Social Ecology (Social Ecology 200), Research Methods (Social Ecology 201), 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). One four-unit field study (Social Ecology 297) course may be counted as one of the seven required courses. 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 appointed, after a review of their graduate work and thesis plans by a faculty committee. All M.A. students who have been in the M.A. program for three or more years will be formally evaluated by the Social Ecology faculty at the end of each academic year. At that time the faculty may recommend that the student continue toward the M.A. or cease study in the Program. One year of academic

residence is required, but completion of all M.A. requirements, including a thesis approved by the student's committee, ordinarily takes about two years.

M.A. Concentration in Facility Planning and Management

The Master's concentration in Facility Planning and Management is designed to train researchers and professionals who will contribute to our understanding of the health, behavioral, and socioeconomic impacts of facility design and building technologies. Major research problems emphasized in this concentration include the implications of population dynamics for the planning and design of facilities, potential hazards in the physical environment and the perception of risk among environmental regulators and the general population, institutional responses to public policies that regulate private use of the physical environment, the usefulness of technological innovations for improving the environment, and the manner in which policy makers approach and solve problems of the physical environment. Developed in consultation with the International Facilities Management Association (IFMA), the training program emphasizes the incorporation of behavioral and health data into the siting, construction, and interior and exterior design of buildings.

The need for people trained in facility planning and management is growing rapidly, as corporations and organizations increasingly require the expertise of individuals who can plan and manage facilities. Facility managers are employed to manage a wide array of physical facilities, including corporate and government buildings, educational institutions, hospitals, facilities for the elderly, utility companies, and factories.

The program leads to the M.A. degree in Social Ecology with a concentration in Facility Planning and Management. Students are required to complete nine courses: Seminar in Social Ecology (Social Ecology 200), Research Methods (Social Ecology 201), an approved course in statistics or methodology, and six elective courses designed to train students in strategic planning and management of built environments. In lieu of a thesis, students must successfully complete a comprehensive examination consisting of oral and written components.

Master in Urban and Regional Planning

The Master in Urban and Regional Planning (M.U.R.P.) program seeks to train researchers and professionals in contemporary methods of planning and policy analysis. Students gain familiarity with planning problems and practices through a series of courses on the growth and development of metropolitan areas, and the environmental, economic, and social challenges and opportunities modern communities face. This program is somewhat distinguished from others by its view of planners as mediators between the market-driven forces of metropolitan change and various social concerns, such as orderly and environmentally sensitive development.

Some of the specific "planning" issues addressed include the environmental, social, health, and economic impacts of urban and regional development; state and municipal fiscal policy; poverty-related concerns; urban design; the operation of housing and land markets; land-use law and regulation; transportation planning; and planning for urban development in less-developed countries. Students are provided not only with a rigorous foundation in the tools public and private sector planners use, but also with the intellectual wherewithal to use them effectively in addressing these concerns. Participation in faculty research is encouraged as part of the program, as are field placements in local planning agencies and private planning and development firms.

The range of employment opportunities for professional planners in the public and private sectors is expanding due to rapid metropolitan growth, rising concerns over health and environmental issues, and the continuing need for redevelopment and social

services in older communities. Career paths exist in governmental agencies dealing with urban planning, economic development, transportation planning, regional growth management, air quality and water treatment, public utilities, health care organizations and public health agencies, and conservation organizations and agencies. Many employment possibilities also exist with private consulting firms specializing in environmental impact assessment, with residential and commercial development firms, and many engineering and architectural firms.

The program leads to the M.U.R.P. degree — Master in Urban and Regional Planning. Students are required to complete 18 courses, four of which are electives. In addition, a written comprehensive examination is required during the last quarter of residency in the program. A total of four units (two courses) of independent study in preparation for the examination also is recommended. Successful completion of the examination is required before the degree can be awarded. A thesis is not required.

Ph.D. Program

The doctoral program offers advanced training that prepares students for academic careers in research and teaching. Graduates also are well qualified for employment in private or governmental agencies, where they can bring advanced academic training, strong methodological and statistical skills, and special expertise to such issues as environmental health and design, urban and regional planning, criminal justice, and social policies affecting mental and physical health. Students who enter with the normal academic preparation and pursue a full-time program of study ordinarily should be able to earn the Ph.D. in four to five years of study beyond the baccalaureate.

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. The following core courses are required of *all* Ph.D. students: Seminar in Social Ecology (Social Ecology 200), Research Methods (Social Ecology 201), two approved quarters of graduate-level statistics, and one additional approved research methods course.

In addition to these five required core courses, doctoral students who are pursuing a general course of study must also complete a minimum of six other approved graduate-level courses before advancement to candidacy. These six additional required courses are exclusive of any field study, directed study, independent study, or dissertation research courses (Social Ecology 297, 298, 299, or 296). Students may take each of their electives within a different substantive area or may take clusters of courses within fewer subareas.

The requirements differ somewhat for students who choose to pursue a more specialized course of study in one of the four concentrations. The requirements for the concentrations are summarized in subsequent sections.

Program faculty believe that Ph.D. students should become involved in research very early in their graduate careers. To encourage such involvement, doctoral students are required to complete a research project before advancement to candidacy for the Ph.D. degree. The method of research may include experiments, questionnaire and interview studies, systematic field observation, secondary analysis, computer simulations, and other methods. It is expected that students will begin their project during the first year in residence and will complete it during the second year. The written report of the project may be equivalent to a Master's thesis and may be submitted as such if the student's committee approves.

Also, before being officially advanced to candidacy for the Ph.D. degree, doctoral students must demonstrate mastery of one or more research areas within Social Ecology. Accordingly, students are required to submit a written analysis of a social-environmental problem relevant to one or more disciplines within Social Ecology. The breadth requirement can be completed through alternative written formats including a comprehensive examination or the submission of a major paper or series of papers that intensively examines specific research issues. Preferably, the perspective taken should be interdisciplinary, 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 by no later than the third quarter of their second year. Once the student's plans have been approved and implemented, the examining committee will meet with the individual to determine if the breadth requirement was successfully completed, and to recommend additional academic work if it is deemed necessary.

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 Dean of Graduate Studies on behalf of 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 approach to the problem, and a description of the planned methods for analyzing the data collected. It is strongly recommended that students advance to candidacy during their third year of study. 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 made by the Dean of Graduate Studies 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 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 Program. Evaluation of Ph.D. students advanced to candidacy is the responsibility of the student's doctoral dissertation committee. Prior to the award of the Ph.D. degree, each doctoral student must serve as a Teaching Assistant under faculty supervision for at least two quarters.

Ph.D. 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 environmental and planning professionals. These questions deal with health, behavioral, and environmental design factors, as well as the urban and regional planning options considered by public and private-sector policymakers. The curriculum

and the diversity of faculty within the concentration afford unique opportunities for multidisciplinary research and training. One of the concentration's strengths is its research methods sequence, which draws from several disciplines and includes survey and epidemiologic methods, water and air quality testing, facilities programming and postoccupancy evaluation, legal research, assessment of psychological effects of environmental factors, and analyses of urban and regional phenomena. Potential employment sources for graduates include academic and research institutions; federal agencies; policy-making organizations; urban and regional planning agencies; national, community, and workplace health-promotion programs; and environmental design consulting firms.

Each incoming student takes the five core courses required of all Ph.D. students, noted above, and eight elective courses drawn from the three focal areas within this concentration: Environmental Design and Behavior, Urban Planning and Design, and Environmental Health and Public Policy. The elective courses cover topics such as environmental and urban design, environmental health risk, urban planning, facilities design and management, behavioral epidemiology, demography, the regulatory process, urban and regional analysis, technological hazards and change, and environmental toxicology. The normative time for completion of the Ph.D. requirements is four to five years. Students are expected to become involved in research activities as early as their first year of graduate study. Two years of course work are followed by a predissertation research project, the fulfillment of the breadth requirement, and the preparation of a dissertation proposal. The fourth and possibly fifth years are devoted to the development and completion of the dissertation research.

Ph.D. Concentration in Criminology, Law and Society

The study of the criminal, crime, and institutional responses to illegal behavior is the focus of the doctoral concentration in Criminology, Law and Society. Students examine issues related to the etiology of crime, the impacts of crime on society, and the process of changing criminal behavior. The concentration also includes an emphasis on social regulation and the civil justice system which combine in a unique program that allows the investigator to address the nature of illegal activities as well as the response of individual and social systems to those activities.

Students gain familiarity with a number of subjects including sentencing; crime rates; selective incapacitation; modes of modifying criminal behavior; offender dangerousness predictability; motives of police behavior; punishment; alternatives to incarceration; victimology; white-collar and organized crime; behavior of courts, juries, and regulatory agencies; and interactions among organizations within the legal system. Students may concentrate on particular substantive areas of law and society including occupational health and safety, white-collar or economic crime, environmental law, and business-government interactions. 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 concentration aims to develop theoretical sophistication and to prepare the graduate student for research, teaching, and administrative work in institutions in the legal system, the criminal justice system, and related organizations.

In addition to the five core courses and other requirements for the Ph.D. degree, students take at least six other graduate courses in areas such as theories of crime, law and society, and legal institutions and social policy. Students become involved in research activities from the earliest stages of their training and conduct independent, supervised research projects during the second year of graduate study. Methods of research may include experiments, questionnaire and survey studies, systematic field observation, computer simulation, and legal research. Students complete a

breadth requirement during year three. One option for doing so is by means of a critical and conceptually integrative literature review on a specific topic in criminology or law and society, although other options—including a comprehensive examination—are available. The fourth and fifth years of study are devoted to developing and defending a dissertation proposal and completing dissertation research. Opportunities for field placements in legal and criminal justice settings are also available.

Ph.D. Concentration in Health Psychology

The doctoral concentration in Health Psychology focuses on identifying, evaluating, and enhancing the psychosocial and behavioral factors that promote health, prevent disease, and optimize medical treatments. The concentration involves a strong commitment to multidisciplinary scholarship and a focus on knowledge and theory, research competencies, and health professional skills. Students are encouraged to join active investigative teams studying processes such as adaptive aging; stress, coping, and social support; personality factors that increase resilience to health threats; the development of heart-healthy behavior patterns during childhood and adolescence; worksite health promotion and the design of work environments; and perceptions of health and environmental risks. In addition, a year-long practicum provides students with research experience in health care settings and exposure to clinical interventions in the field of health psychology. Potential employment sites for graduates include academic institutions; health care settings; federal agencies; school, workplace, and community health-promotion programs; research organizations; and university and government policy institutes.

Students concentrating in Health Psychology fulfill the basic requirements for a Ph.D. degree including the required core courses. In addition, students take four health psychology courses, Seminar in Health Psychology (Social Ecology 258), Biobehavioral Aspects of Health and Illness (Social Ecology 273), Human Stress and the Environment as Stressor (Social Ecology 267), and the three-quarter Practicum in Health Psychology (Social Ecology 209A-B-C); one health psychology elective, Child Health Psychology (Social Ecology 277), Perceptions of Environmental and Health Risks (Social Ecology 275), Interpersonal Processes and Health (Social Ecology 262), or Psychosocial Dimensions of Chronic Illness (Social Ecology 231); and three additional courses, Social Gerontology (Social Ecology 225), Seminar in Environmental Psychology (Social Ecology 288), Violence in Society (Social Ecology 237), Research on Subjective Well-Being (Social Ecology 248), only one of which can be taken from the Health Psychology cluster.

Students are expected to become involved in research activities from the earliest stages of their training and to conduct an independent, supervised research project during their second year. Students take a two-part qualifying examination during their third year, involving a written comprehensive examination (in fulfillment of the breadth requirement) and a critical and conceptually integrative literature review on a specific health psychology topic. The fourth and possibly fifth years are devoted to developing and defending a dissertation proposal and completing dissertation research. Opportunities for field placements in health-related settings also are available.

Ph.D. Concentration in Human Development

The doctoral concentration in Human Development focuses on the development of individuals through the life span and the effects of the varying social, physical, and cultural contexts in which development takes place. Students are trained in key developmental theories and concepts, with attention to all phases of the life span; in the research methods of several social-scientific specialties; and in the conduct of problem-oriented research that addresses issues of current concern to individuals and to society.

as a whole. Potential employment sites for graduates include academic institutions (e.g., departments of psychology or human development); human services settings (e.g., hospitals, schools, community agencies); research organizations; government policy institutes; and a variety of private sector employers.

Students are encouraged to become actively involved in research from the earliest stages of their training. Current research teams are investigating the effects of divorce and custody arrangements; the effects of maternal and paternal employment on parents' well-being and child and adolescent outcomes; children's health risk perceptions; the strengths and limitations of children as witnesses; modes of adapting to stress over the life span; and the impact of activity patterns and social ties on the well-being of the elderly.

Students fulfill the basic requirements for the Ph.D. degree including the required core courses. In addition, students take two human development courses, Principles of Human Development (Social Ecology 220) and Issues in Human Development (Social Ecology 236A-B); two courses from the life span cluster of the curriculum, e.g., Adolescence (Social Ecology 204), Social Gerontology (Social Ecology 225); and four additional courses, distributed as best suits the student's plan of study. Students select these courses from clusters that focus on the foundations of development; different parts of the life span; methods and strategies of research; social, physical, and cross-cultural contexts of development; health and adjustment over the life span; and social problems and social policies. In addition to courses offered by the Program in Social Ecology, the Human Development curriculum may include courses offered by the Graduate School of Management, the Department of Psychobiology in the School of Biological Sciences, and the Departments of Anthropology and Sociology in the School of Social Sciences.

In addition to course work, students conduct an independent, supervised research project during their second year. They take a two-part qualifying examination during their third year, consisting of a written comprehensive examination (in fulfillment of the breadth requirement), and prepare a critical and conceptually integrative literature review on a topic of importance to the field of human development. This topic often is related to the student's future dissertation research. The fourth and possibly fifth years are devoted to developing and defending a dissertation proposal and completing dissertation research.

Undergraduate Courses

Principles and Methods

10 Research Design (4) F, W, S. Lecture, three hours. An introduction to the logic behind and methods of designing research studies and experiments in Social Ecology. Statistical reasoning discussed to the extent necessary for relevant data analyses. (III)

13 Statistical Analysis in Social Ecology (4) F, W. 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.

H20A-B-C Honors: Critical Issues in the Social Sciences (6-6-6) F, W, S. 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)

100 Special Topics in Social Ecology (4). Lecture, three hours (or variable). Special topics courses are offered from time to time, but not on a regular basis. Course content varies with interests of the instructor. Prerequisite: consent of instructor. May be repeated for credit.

166A-B-C Social Science Statistics I, II, III (4-4-4). Lecture, four hours; laboratory, three hours. **166A-B:** Descriptive statistical concepts and techniques most widely used in social science research. Weekly labs employ computer graphics to investigate concepts. **166C:** Classical statistical inference, limited to simple random sampling or simple randomization designs. Characteristics of sampling distributions; bias, standard error, mathematical models, estimation, hypothesis testing. Same as Social Sciences 101A-B-C. (V)

166D Introduction to Survey Analysis (4). Seminar, three hours; laboratory, two hours. Statistical analysis of survey data. Statistical report writing. Using a preexisting data base, students design and execute a statistical analysis, write a report of their findings, and present their report to the class. Corequisite: Social Ecology 166C. Same as Social Sciences 101D.

166E Introduction to Statistical Computing (4). Lecture, two hours; laboratory, two hours. Enables the student to utilize the analysis routines available within the Statistical Package for the Social Sciences (SPSS). Methods of data management and interpretation of computer output are presented. Pass/Not Pass Only. Corequisite: Social Ecology 166B. Prerequisite: Social Ecology 166A. Same as Social Sciences 101E.

H190A-B Honors Research (4-4) F, W. 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) S. 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 Studies in Field Settings (4) F, S. 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; restricted to Social Ecology majors. Letter grade only.

195 Field Study (2 to 4) F, W, S. Prerequisites: Social Ecology 194; junior standing; restricted to Social Ecology majors. May be repeated for credit. Pass/Not Pass Only.

198 Directed Studies (2 to 4) F, W, S. Prerequisite: consent of instructor. Pass/Not Pass Only.

199 Special Studies (2 to 4) F, W, S. Prerequisites: consent of instructor and junior or senior status.

Environmental Analysis and Design

E3 Human Environments (4) W. Lecture, three hours. Introduction to concepts of demography, utilization of resources, growth and carrying capacity. Focuses on the biological and physical aspects of current human problems. Employs an ecological perspective to investigate solutions. (II)

E4 Natural Disasters (4) F. Lecture, three hours. Examines the natural processes and impacts of natural disasters. The responses of our society are examined and compared with available prehistoric case studies. Basic understanding of natural processes is gained in this course. (II)

E5 Introduction to Environmental Quality and Health (4) S. Lecture, three hours. A preliminary survey of people's interaction with the physical and biological environments. Components included are water, air, food, noise, and housing. Included are elements of environmental administration, environmental education, and consumer protection. International aspects of these factors examined. (II)

E6 Introduction to Ecology (4) S. Lecture, three hours. Principles of ecology: application to populations, communities, ecosystems, and humans. Same as Biological Sciences 1C. (II)

E8 Introduction to Environmental Analysis (4) W, S. Lecture, three hours. An overview of the analytic techniques and theoretical principles shared by public health, urban planning, and environmental design. Convergence and divergence among these disciplines for research and practice are discussed. (III)

E100 Special Topics in Environmental Analysis (4). Lecture, three hours. Special topics courses are offered from time to time. Course content varies with interest of the instructor. Prerequisites: Social Ecology E8 and, in some cases, consent of instructor.

E101 Environmental and Public Health Policy (4) W. 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.

E102 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: Social Ecology E8. (VII-A)

E103 Topics in Applied Ecology (4) F. Lecture, three hours. A survey of how ecological concepts are used in dealing with selected environmental management problems, such as pollutant cycling, agricultural practices, water quality, pest management, and the promotion of desirable species. Legal, social, and economic implications of the topics are also considered. Prerequisite: Social Ecology E5, E8, or course in ecology. Formerly Social Ecology E120.

E104 Urban Sociology (4) W. 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. Prerequisite: Social Ecology E8. Formerly Social Ecology E132.

E105 Environmental Law (4). Lecture, three hours. Environmental law is a 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 are utilized. Prerequisite: Social Ecology E8. Formerly Social Ecology E162.

E106 Human Ecology (4) S. Lecture, three hours. Examines the contradictory forecasts of a range of population-environmental models, including T. R. Malthus' *First Essay on Population* (1798), the U.S. government's *Global 2000 Report*, and Julian Simon's *Ultimate Resource*. Prerequisite: Social Ecology E8. Formerly Social Ecology E173.

E107 Urban and Regional Planning (4). Lecture, three hours. Introduction to the process of urban and regional change and its relationship to planning in America. Seminal works concerning urban change and models of the city derived from these works are related to the policymaking functions of planning in our society. History of planning, aspects of the planning process, and roles in the planning profession are considered. Prerequisite: Social Ecology E8 or permission of instructor.

E108 Environmental Psychology (4) F. 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 and E8. Formerly Social Ecology E187.

E109 Urban Public Policy (4). Lecture, three hours. A critical survey of current U.S. urban, metropolitan, and regional issues and trends, and their relation to spatial theories, to planning, and public policy-making. Topics include Sunbelt/Frostbelt growth and decline, urban employment and unemployment, central city redevelopment, and housing and the urban environment. Prerequisites: Social Ecology E8 and 10. Formerly Social Ecology E130.

E120 Elements of Environmental Design (4) F. 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. Prerequisite: Social Ecology E8, E102, or consent of instructor. Formerly Social Ecology E143.

E121 Living in Space (4) W. Lecture, three hours. Addresses environmental quality and health problems encountered by humans living aboard a space station such as weightlessness, radiation, isolation, confinement, and the need for autonomy. Examines aspects of space technology including life support, robotics, expert systems, and artificial intelligence. Prerequisite: Social Ecology E8. Formerly Social Ecology E149.

E122 Environment and Health (4). Lecture, three hours. Examination of relationships between sociophysical environments and physical and mental health at both individual and aggregate levels of analysis. Environmental resources and risk factors associated with resistance or vulnerability to disease are considered at each level. Prerequisite: Social Ecology E8. Formerly Social Ecology E159.

E123 Advanced Environmental Psychology: Facilities Design for the Workplace (4). Lecture, three hours. Survey of major topics in the field of facilities design and management including methods of environmental programming and postoccupancy evaluation, design criteria for office automation, and facility-based strategies for promoting employee health, productivity, and improved quality of worklife. Prerequisites: Social Ecology E8 and E108. Formerly Social Ecology E188.

E124 Environmental Design Research Methods (4). Lecture, four hours. In-depth treatment of theoretical and empirical work relevant to selected topics in environmental psychology, followed by field work with architectural consultants. Students develop environmental evaluation instruments, collect data, and report findings to the consultants for review. Prerequisites: Social Ecology E8, 10, and E108. Formerly Social Ecology E189.

E125 Environmental Programming (4) F. Lecture, three hours. Examines various styles and methods of programming for buildings and building interiors. Examines information designers need; methods for acquiring, sorting, and processing information; how this information can be made more scientific, systematic, and reliable; how it can be represented, and what kinds of value judgments are involved. Prerequisites: Social Ecology E8; E120 or consent of instructor. Formerly Social Ecology E147.

E126 Environmental Design for International Tourism (4) W. Lecture, three hours. Architectural, landscape, interior, and urban designs triggered by international tourism. Latest advances in the master-planning of tourism complexes; their integration into regional developments. Ecology, identity, and heritage of human environments as a new challenge for tourism design. Prerequisites: Social Ecology E8 and upper-division standing.

E127 International Environmental Management (4) W. Lecture, three hours. Introduction to the 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: Social Ecology E8.

E128 Design and Behavior (4) W. Lecture, three hours. Tools of architectural analysis and programming. Teaches social scientists basic graphic communication tools. Prerequisites: Social Ecology E8 and E125. Formerly Social Ecology E112A.

E140 Survey Analysis of Urban Residents (4) F. Lecture, three hours. Hypotheses concerning the nature and problems of metropolitan areas are tested using Orange County data. A resident survey and the 1980 census are used to study urban social and economic issues. Empirical research projects are assigned. Prerequisites: Social Ecology E8, 10 and 166A-B-C. Formerly Social Ecology E111.

E141 Urban and Regional Analysis (4) F. Lecture, three hours. An introduction to concepts and methods in regional science with applications to planning, public policy, and environmental analysis. Spatial interaction, location, multiplier, basic activity, and input-output models and their relation to ongoing urban and regional phenomena are considered. Prerequisites: Social Ecology E8; Social Ecology 10 or 166A-B-C. Formerly Social Ecology E119.

E142 Environmental Geology and Ecology for Land-Use Planning (4) S. Lecture, three hours. Applications of a number of scientific techniques used in environmental science and surveyed with reference to specific case studies. Students incorporate these techniques and sampling procedures in their research designs. Prerequisites: Social Ecology E8 and SE10

or equivalent; previous or concurrent enrollment in Social Ecology E142L; consent of instructor; senior standing preferred. Same as Anthropology 143A. Formerly Social Ecology E175.

E142L Laboratory for Environmental Science and Land-Use Planning (4) S. Provides weekly lecture, lab experiments, and demonstration of techniques in the environmental sciences. Three to five Saturday field trips as well as a four-day field trip to study specific environmental problems. Prerequisites: Social Ecology E8 and previous or concurrent enrollment in Social Ecology E142; consent of instructor; senior standing preferred. Same as Anthropology 143LA. Formerly Social Ecology E175L.

E143 Social Ecology of the Borderlands (4). Lecture, three hours. An introduction to the most important socio-economic issues affecting the urban-regional context of the U.S.-Mexico border area. Borderlands regional development, urbanization, migration, industrialization, labor market, and environmental issues are considered. Prerequisite: Social Ecology E8. Formerly Social Ecology E136. (VII-B)

E144 Urbanization and Social Change (4). Lecture, three hours. Examines interactions between social structure and physical space in three contexts: (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: Social Ecology E8. Formerly Social Ecology E139.

E145 Environmental Impact Studies (4). Lecture, three hours. Covers the new laws requiring the preparation of environmental impact statements before projects are allowed to begin. Conceptual framework and methods of analysis are reviewed through case studies. Prerequisite: Social Ecology E8. Formerly Social Ecology E150.

E146 Dynamics of Human Populations (4). Lecture, three hours. Introduction to social demography. Topics include the world population explosion, the revolution in longevity, misbeliefs about our ancestors, the American baby boom, women in the workforce in industrial societies, and Wall Street-style demographics. Prerequisite: Social Ecology E8. Formerly Social Ecology E171.

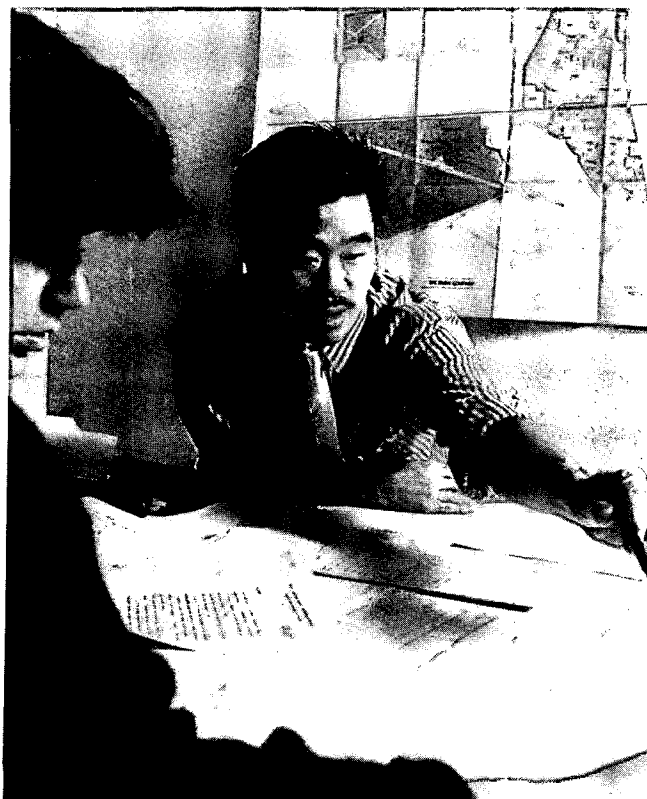
E160 Microbial Ecology of Natural and Polluted Waters (4) F. Lecture, three hours. Examines microorganisms and their functions in the aquatic environment, specifically microorganisms' role in the biogeochemical cycles of nitrogen, sulfur, and mercury, and how our activities are affecting these cycles. Considers how and why indicator organisms are used in the determination of water quality for public health. Prerequisites: Social Ecology E5 and E8 and/or a general course in the Biological Sciences Core curriculum. Same as Biological Sciences 118. Formerly Social Ecology E125.

E160L Microbial Ecology of Natural and Polluted Waters Laboratory (4). Laboratory, three hours. Enumeration and identification of microorganisms from various aquatic environments. Examines microbial mediation of the sulfur, nitrogen, and mercury cycles and the public health aspects of water quality. Prerequisites: Social Ecology E8 or a general course in the Biological Sciences Core curriculum and completion of or concurrent enrollment in Social Ecology E160. Same as Biological Sciences 118L. Formerly Social Ecology E125L.

E161 Chemistry for Environmental Engineering (4). Lecture, three hours. With laboratory. Basic concepts from general, physical, organic, and analytical chemistry as they relate to environmental engineering. Particular emphasis on the fundamentals of equilibrium and kinetics applied to acid-base chemistry, mineral and gas solubility, coordination, redox reactions, and absorption. With laboratory. Prerequisites: Chemistry 1C; Engineering ME91 or consent of instructor. Same as Engineering CE164.

E162 The Chemical Components of Water Quality (4). Lecture, three hours. A survey of the chemical properties of water used for drinking, agriculture, and industry. Covers basic chemical analyses of water and the significance of these tests in determining water quality. Prerequisites: Chemistry 1A and Social Ecology E5 and E8 or a general course in the Biological Sciences Core curriculum. Same as Biological Sciences 119. Formerly Social Ecology E140.

E163 Chronological Dating Techniques in Environmental Reconstruction (4) F. Lecture, three hours. Radiocarbon dating is a good example of



Social Ecology majors complete their field study requirement in a variety of settings, such as the Irvine City Planning Office.

a common technique which has wide application for a number of different fields. Surveys a number of dating techniques which can be used to establish a chronological framework. Particular emphasis placed on applications for environmental reconstruction and archeology. Prerequisite: Social Ecology E8. Same as Anthropology 142A. Formerly Social Ecology E153.

E164 Environmental Chemistry (4). Lecture, three hours. Uses and impact of heavy-metal toxins in the environment traced from ore bodies, product manufacture, consumption, and waste management. Routes of exposure; medical and societal impacts of these exposures. Prerequisites: Social Ecology E8; junior standing and consent of instructor. Formerly Social Ecology E155.

E166 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 are discussed. Criteria for monitoring cost-effectiveness of these programs are considered. Prerequisite: Social Ecology E8. Formerly Social Ecology E157.

E168 Community Health: An Epidemiological Approach (4). Lecture, three hours. An examination of the distribution and dynamics of human health problems on the community level and exploration of scientific investigations used to determine circumstances under which diseases occur or health prevails. Epidemiology including environmental, genetic, nutritional, and social ramifications. Prerequisites: Social Ecology E8, consent of instructor. Formerly Social Ecology E158.

E169A-B Applied Ecology Seminar (3-3). Seminar, two hours. Introduces Applied Ecology majors to a variety of research occurring in industry and universities concerned with subjects addressed in the major. Selected topics include environmental health issues, water quality, hazardous waste management, biotechnology, and economic concerns in management of pollution problems. Prerequisites: Social Ecology E8; upper-division Applied Ecology majors.

E185A-B Senior Seminar on Peace and Conflict, I, II (2-2) F, W.

Students attend weekly seminar to discuss current global issues in conflict, cooperation, and peace. Weekly attendance at GPACS Forum also is required. Seminar utilized to analyze Forum presentations and to prepare senior research paper. **185A:** Prepare bibliography. **185B:** Prepare research proposal. Open only to seniors enrolled in the in the Global Peace and Conflict Studies minor. Same as Humanities 181A-B and Social Science 184A-B.

E185C Senior Seminar on Peace and Conflict III (4) S. Continuation of Social Ecology 185A-B. Students write a senior research paper under the direction of a faculty member. Attendance at the GPACS Forum also is required. Prerequisites: Social Ecology 185A-B. Open only to seniors enrolled in the in the Global Peace and Conflict Studies minor. Same as Humanities 181C and Social Science 184C.

Criminology, Law and Society

J4 Introduction to Criminal Justice (4) F, W, S. Lecture, three hours. Traces our legal system from its common law heritage. An introduction to criminal and constitutional law in the United States providing basis for discussion of our court structure, corrections, probation and parole, and the police activities of arrest, search and seizure, and interrogations. Juvenile Court law and procedure discussed. (III)

J40 Forms of Criminal Behavior (4). Lecture, three hours. "Crime in the streets" and "crime in the suites" have aroused public concern. Political agitation surrounds crimes of violence; reformers demand equivalent sanctions against the white-collar criminal. (III)

J41 The Police (4). Lecture, three hours. A social-psychological study of the police. Examines the nature and structure of police organizations and discusses their relationship to the social environment.

J44 Crime and Society (4). Lecture, three hours. Examination of the sources of crime in contemporary American society and the concept of crime as one form of "deviance." Review of social policy in crime control, and discussion of the organization and structure of police forces and correctional agencies.

J45 The Police and Social Change (4). Lecture, three hours. An examination of the history and philosophy of police organization and administration with special emphasis on how society determines the role of the police and the influence of changing social conditions on the role of the police.

J80 Law and Society (4). Lecture, three hours. A survey of man's relationship with law including an analysis of the theoretical and practical role of law in the evolution of Western civilization with emphasis on modern American society. Examines current issues in the sociology and psychology of law. (III)

J100 Special Topics in Criminal Justice (4). Lecture, three hours. Special topics courses are offered from time to time. Course content varies with interest of the instructor. Prerequisites: Social Ecology J4 and, in some cases, consent of instructor.

J101 Civil Legal System (4) F. 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. Strongly suggested for those students who intend to take Social Ecology J144, J190, S161, or E162, or who plan to attend law school. Course requirements include reading, briefing and debating judicial opinions, legal research, and writing an appellate legal brief. NOTE: Students who have taken Social Ecology 89 may not enroll in this course.

J110 Homicide and Suicide (4) S. Lecture, three hours. Examination of the similarities and dissimilarities between the two leading causes of death among young people, homicide and suicide. Recommended: Social Ecology 10 and 13.

J114 Organized Crime and American Society (4) W. Lecture, three hours. Examination of the phenomenon of American organized crime from a sociological perspective and explanation of methods by which this particular form of criminality is tolerated at various levels of society. Emphasis on ways in which "underworld" interests interact with legitimate economic and political institutions.

J115 Federal Law Enforcement (4). Lecture, three hours. Examines the peculiar legal and organizational concerns of the federal system of law

enforcement as well as some of the crimes it is uniquely designed to address—white-collar crime, drug trafficking, racketeering, and public corruption. The roles and responsibilities of the FBI, DEA, Customs, and other policing agencies. Prerequisites: Social Ecology J4, J101, and consent of instructor.

J120 Law and Inequality (4) F. Lecture, three hours. Examines the various aspects of the law as they relate to three specific areas of inequality: immigration and immigrants, race, and gender. Discusses both the role of law as a tool of social reform and the limitations of the legal system historically in resolving issues of inequality.

J121 Sociology of Law (4) S. 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.

J132 Juvenile Delinquency (4) S. Lecture, three hours. Study of the patterns of delinquent behavior, selected theories that explain the behavior, and current research that aims at enhancing exploratory power. Attempts to prevent and control delinquency are put in a historical perspective that includes examination of the development of the current juvenile justice system and evolution of modern juvenile law.

J133 Theories of Deviance (4) S. 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 178D.

J134 Victimless Crimes (4) W. Lecture, three hours. An examination of criminal offenses in which there are apt to be no complaining witnesses—homosexuality, prostitution, gambling, drug use, and abortion. Implications of the use of criminal law to control these behaviors in terms of the individuals involved in the offenses, other persons, and the society in general. Various alternative social policies reviewed and evaluated.

J136 Constitutional Law (4) F. 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: Social Ecology J4.

J137 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; and examination and identification of suspects. Pretrial motions such as speedy trial and discovery of evidence may also be covered.

J138 Victims of Crime (4). Lecture, three hours. Examines the impact of crime upon a variety of victims, e.g., victims of child and spousal abuse, burglary, arson, robbery, and rape. Considers such topics as victim compensation, victim-offender relationships, and the secondary victimization process.

J140 Prisons, Punishment, and Corrections (4) F. Lecture, three hours. A review of the history and present conditions regarding treatment of law violators. The conflict among rehabilitation, vengeance, and deterrent principles. Analysis of civil rights, racial antagonism, and politicalization in the contemporary American correctional system.

J141 Seminar in Criminal Justice (4). Seminar, three hours. Selected topics in the field of criminal justice examined. Issues vary with the interests of the instructor and students, and include such topics as violent crime, political crimes, police discretion, and civil rights of prison inmates. Prerequisite: Social Ecology J4.

J142 White-Collar Crime (4) F. Lecture, three hours. Criminal activity of business and corporate enterprise, both in terms of theoretical insights into the explanations of criminal behavior and in terms of social concerns with deterrence. The pioneering work of Edwin H. Sutherland and the contemporary investigations of Ralph Nader provide substantive background. Review of specific cases and specific forms of social response to white-collar crime.

J143 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.

J144 Criminal Law (4) W. Lecture, three hours. Deals specifically with the substantive nature of criminal law as opposed to criminal procedure which is concerned with how the criminal law is enforced. Considers three types of crime: offenses against the person, including laws of homicide, assault, and battery; offenses against habitation and occupancy, including laws of burglary and arson; and offenses against property, including laws of larceny, robbery, forgery, and counterfeiting.

J145 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.

J146 Social Control of Violence (4). Lecture, three hours. Studies the police as controllers of violence, users of violence, and as victims of violence. Prerequisite: Social Ecology J4.

J147 Law and Social Change (4) S. 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.

J148 Criminological Theory (4) F. 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.

J150 The Legal Profession (4). Lecture, three hours. Role of the legal profession in modern society, surveying the diverse professional roles lawyers play and comparing the American legal profession with that of other societies. The course will focus on the "litigation explosion," ethical problems, interactions between lawyers and other professionals, and training and socialization of new lawyers.

J164 Social Control of Delinquency (4) W. Lecture, three hours. Assumes familiarity with theories of juvenile delinquency, the juvenile justice system, and the elements of juvenile law. Using that knowledge, students explore current research in primary and secondary prevention of delinquency, and relevant case law. An original research project is required. Prerequisites: Social Ecology 10 and J132.

J181 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.

J182 Legal Sanctions and Social Control (4) F. Lecture, three hours. Examination of criminal sanctions as mechanisms of social control. Study to include the nature, function, and organization of courts as sanction generating institutions, and problems associated with punishing white-collar and corporate illegalities.

J190 Psychology and the Law (4) S. Lecture, three hours. Focuses upon the psychological assumptions of the American legal system and mental health aspects of the provision of criminal justice services. Topics include civil commitment, the insanity defense, competence to stand trial, jury selection, eye-witness identification, and the use of the police, courts, and correctional institutions in the prevention of behavior disorder.

Psychology and Social Behavior

S9 Introduction to Human Behavior (4) F, W, S. Lecture, three hours. An introduction to models of human development and mental health, and the application of the scientific method to the study of social behavior. The differences among individual, group, and societal levels of analysis and intervention are emphasized. (III)

S11 Human Development Over the Life Cycle (4). Lecture, three hours. Emphasis on patterns of growth and change in the development of self-identity, mastery and competence, and interpersonal relations during each of five life-cycle periods: infancy, childhood, adolescence, adulthood, and old age. Special attention to social, institutional, and environmental influences on the course of development. (III)

S45 AIDS Fundamentals (4) F. Lecture, three hours. 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)

S86 Introduction to Social Psychology (4). Lecture, three hours. Introduction to the theories and core topics of social psychology, including group dynamics, persuasion, self-justification, aggression, and interpersonal attention. Social Ecology S86 and Psychology 78A/Sociology 31 may not both be taken for credit. (III)

S100 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: Social Ecology S9 and, in some cases, the consent of instructor.

S101A-B Counseling Theory I, II (4-4). Lecture, three hours. Theoretical approaches and related counseling techniques examined, including client-centered, rational-emotive, transactional analysis, Adlerian, Gestalt, and behavioral counseling. Beginning relationship skills practiced in a laboratory section, using film and audio tapes.

S104 Behavioral 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. Focuses on the development of assessment skills and the application of these techniques in intervention and research programs. Prerequisite: Social Ecology S9; Social Ecology 10 recommended.

S105 Developmental Disabilities (4). Lecture, three hours. Examines current knowledge about severe and persistent behavioral deficits, particularly mental retardation and childhood autism. Topics include intellectual assessment, malnutrition, chromosomal anomalies and inborn errors of metabolism, cultural-familial retardation, institutionalization and deinstitutionalization, and current trends in prevention and amelioration.

S106 Clinical Child Psychology (4) F. Lecture, three hours. Examines research and theory concerning childhood psychopathology. Topics include diagnosis and assessment, early identification of high-risk children, fears and phobias, antisocial behavior, childhood psychoses, depression, hyperactivity, child abuse, and child advocacy. Prerequisite: Social Ecology S9; Social Ecology 10 recommended.

S107 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. Prerequisite: Social Ecology S9; Social Ecology 10 recommended.

S108 Social Ecology of Child Abuse and Neglect (4) F. Lecture, three hours. Emphasizes integration of psychological, social, and cultural factors for understanding the etiology of child maltreatment. Prediction, treatment, prevention, and policy issues also are covered.

S109 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 are reviewed. Introduces the application of cognitive behavioral methods to problems of depression, anxiety, anger, pain, and impulsivity.

S110 Human Stress (4) W. Lecture, three hours. Stress is presented as a multidisciplinary topic. Biological, psychological, and sociological approaches to the study of adaptation-related disorders are reviewed. The environmental demands of contemporary urban life, such as noise, crowding, work pressure, and traffic congestion, are examined for their impact on personal health and behavior. Methods of stress reduction are also presented.

S111 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. Prerequisite: Social Ecology S9. Social Ecology S111 and Psychology 120A may not both be taken for credit.

S113 Infant Development (4) F. Lecture, three hours. An overview 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: Social Ecology S9.

S116 Peer Counseling (4). Lecture, three hours. Introduction to paraprofessional counseling and social support. Review of the effectiveness of psychotherapy and comparison of the analytic, humanistic, and behavioral approaches on their assumptions, goals, and verbal processes. Special counseling issues include crisis intervention, suicide prevention, death/dying, and ethics. Prerequisites: Social Ecology 10 and S9.

S117 Social Relations (4) S. Lecture, three hours. The effect of social relations on psychological and physical well-being, social relations among different age and sociodemographic groups, the processes involved in the formation of love relationships and friendships, and strategies for helping the socially isolated and those with dysfunctional relationships. Prerequisite: Social Ecology 10 or equivalent.

S118 Interviewing and Assessment (4). Lecture, three hours. Topics covered include strengths and limitations of the interview as a method for gathering information; interview strategies and skills; unintended interviewer effects on the data gathered; content analysis and coding of interview data; and comparison of interview with questionnaire methods of assessment. Students gain substantial experience in interviewing and some experience in questionnaire design. Prerequisite: Social Ecology S9 or S11 or an introductory course in psychology.

S120 Violence in Society (4) W. Lecture, three hours. An overview of current theory and research on aggression followed by a focus on anger and violence as problems in individual and social functioning. The process and functions of anger are examined with regard to normal behavior and psychopathology. The determinants, prevalence, and implications of violence in society are analyzed.

S122 Human Sexuality (4) F, S. 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.

S123 Adolescent Development (4). Lecture, three hours. An overview of psychological, social, and biological changes during adolescence. Research readings in selected areas such as changes in family relations, the positive developmental functions of peer relations, adolescents and the schools, and adolescents and work. Prerequisite: Social Ecology S9, S11, S127, or Psychology 7A. Social Ecology S123 and Psychology 21A may not both be taken for credit.

S125 Special Topics in Adult Development (4). Lecture, three hours. Examines the role of culture, social roles, and age norms on selected aspects of social and cognitive behavior. Different periods of adult development (early adulthood, old age) may be the focus of attention in different years. Emphasis is on developmental theory and on the research it has generated. Prerequisite: Social Ecology S11.

S127 Child Development (4) W. Lecture, two hours; laboratory, one hour. Examines physical, social, emotional, and intellectual growth and development between the ages of 2 and 15 years. Classroom seminar and course readings are supplemented by observation of children. Prerequisite: Social Ecology S9. Social Ecology S127 and Psychology 120D may not both be taken for credit.

S132 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: Social Ecology 10 or equivalent.

S136 Intimate Relationships (4). Lecture, three hours. Differing conceptions of the sources of enrichment in relations between individuals. Examination of issues affecting partnerships in contemporary society as they relate to the process of choosing a partner. Partnership and relationship skills in a communication framework are developed in a laboratory section.

S138 Attitude Organization and Change (4). Lecture, three hours. Source, message, and audience effects in communication and persuasion. Psychological functions of beliefs and attitudes. Theoretical explanations of message impact including protection motivation theory and the elaboration likelihood model. Prerequisite: Social Ecology 10.

S143 Attitudes and Behavior (4). Lecture, three hours. Cultural influences on attitudes and behavior. Situational versus attitudinal determinants of compliance and altruism. Cognitive dissonance theory and the minimal-

ly sufficient justification principle. Prejudice and discrimination. Fishbein and Ajzen's theory of reasoned action. Prerequisites: previous or concurrent enrollment in Social Ecology S9 and 10 or consent of instructor.

S145 Perspectives on Child Rearing (4). Lecture, three hours. The impact of different child rearing practices on the development of personality and character. Examination of the effects on development of variations in the structure and dynamics of the family and school, and of the consequences of group care, working mothers, and the one-parent family. Prerequisites: Social Ecology S9 or S11, or any course in developmental psychology or human development.

S148 Development of Sex Differences (4) S. 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 early adulthood is covered. Explanations for male-female differences are sought, focusing on biological (genetic, hormonal) and social (familial, cultural) mechanisms. Prerequisite: Social Ecology S9 or S11. Same as Humanities 172G.

S150 Child Health Psychology (4). Lecture, three hours. Exploration of the psychological antecedents, concomitants, and consequences of medical illnesses in children. Topics include 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; and effects of a child's illness on family. Prerequisite: Social Ecology S9; Social Ecology 10 recommended.

S151 Developmental Psychopathology (4). Lecture, three hours. Research and theory concerning the 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. Prerequisite: Social Ecology S9; Social Ecology 10 recommended.

S154 Work and the Family (4) W. Seminar, three hours. Focuses on the impacts of work on the family. Effects of employment and unemployment on mental health; relations between mothers' and fathers' involvement and quality of parenting; effects of parents' work lives on selected aspects of child and adolescent development. Prerequisite: upper-division standing or consent of instructor.

S156 Introduction to Clinical Psychology (4). Lecture, three hours. Overview of theories, techniques, and research methodologies in counseling and clinical psychology. Behavioral, cognitive, psychodynamic, psychoanalytical, rational-emotive, and multimodal approaches are examined. Lectures supplemented by group discussions and demonstrations. Prerequisites: Social Sciences 7 or equivalent and upper-division standing. Same as Psychology 155S.

S158A-B-C Women's Peer Counseling (4-4-4). Focuses on the development of basic counseling skills and knowledge in specific issues related to the psychology of women. Students are required to provide counseling services at the Women's Resource Center. Prerequisites: juniors and seniors only; students must be accepted into the Women's Peer Counseling Program.

S159 The Family (4) W. Lecture, three hours. Examination of Western family life from population and life course perspectives. Links between large-scale trends and changes in individual's family and household options.

S160 Advanced Seminar: Human Stress (4). Lecture, three hours. Provides an in-depth exposure to selected topics in the field of human stress. General topics include environmental determinants of stress, life events and social support, stress-related disturbances, occupational stress, and stress management interventions. Considerable attention is paid to theoretical and methodological issues in stress research. Prerequisites: Social Ecology S110 and permission of instructor.

S161 Family Law (4) W. 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.

S165 Sociology of Mental Health and Illness (4). Lecture, three hours. An overview of sociological contributions to the study of the nature, causes, and consequences of mental health and illness. Topics include social status and mental health, stressful life events, societal response to

mental disorders, organization of mental health services in the community, problems of institutionalization and deinstitutionalization. Prerequisite: Social Ecology S9 or equivalent.

S166 Behavior Modification (4). Lecture, three hours. Overview of the principles and methods of behavior modification derived from psychological theories of learning. Considers applications of behavior techniques to treat childhood disorders, school problems, juvenile delinquency, marital and sexual problems, alcoholism, and eating disorders. Behavioral interventions in community and industrial settings also are considered.

S170 Personality (4) W. 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: sophomore, junior, or senior only. Social Ecology S170 and Psychology 120P may not both be taken for credit.

S171 Social Conflict (4). Lecture, three hours. A social ecological analysis of social conflict at both the microscopic level (individual and group conflicts) and the macroscopic level (national and international conflicts). Multiple perspectives from psychology, sociology, and anthropology are used to explain the causes, dynamics, and resolution of conflicts.

S173 Behavioral Medicine (4). Lecture, three hours. Examines the biobehavioral aspects of health and illness, with a focus on how stress can contribute to or exacerbate 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: Social Ecology S9.

S177 International Cooperation (4). Lecture, three hours. Using a multidisciplinary perspective, focuses on problems of importance to the future of the planet which require international cooperation for their management and resolution. Problem areas from which specific topics are selected are environment, development, and security. (VII-B)

S178 Social Ecology of Peace I (4) F. Lecture, three hours. Examination of differing definitions of the problem of achieving peace and the special problems of seeking peace in the nuclear age.

S179 Social Ecology of Peace II (4) W. Lecture, three hours. Examination of the relationship to achieving peace, of strivings for national security and arms control, and of the basic formative and stabilizing institutions of society including government, religion, business, education, and the family.

S180 Social Ecology of Peace III (4). Lecture, three hours. Examination of alternate perceptions on approaches to peace, including plans to create an enduring peace and lower the risks of nuclear war.

S181 Leadership (4) W. Lecture, three hours. Examines current theory and research about the origins, aspects, and consequences of leadership. Discussions with recognized community leaders and experiential assignments designed to focus on student's own leadership potential and skills. Social Ecology 10 strongly recommended.

S184 Community Psychology (4). Lecture, three hours. Deals with the community orientation to the delivery of mental health care. The development of community mental health is described, and various models for its practice are delineated. Techniques of evaluating the efficacy of community programs are explored. Previous course in abnormal behavior highly recommended.

S185 Impacts of Divorce (4) S. 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. Prerequisites: Social Ecology S9 or S11.

S186 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.

S187 The Social Animal (4) S. 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. Not available to students who have taken Social Ecology S86 during the 1989-90 academic year.

S188 Social Psychology (4) W. Lecture, three hours. Advanced examination of a limited number of social psychological theories including social impact theory, exchange and equity theories, attribution theory, and social identity theory. Research testing of these theories also is reviewed. Prerequisite: Social Ecology S9. Previous or concurrent enrollment in Social Ecology 10.

S189 Mentors in Higher Education (4) F. 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.

Graduate Courses

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.

201 Research Methods (4). In-depth analysis of the conceptualization of research and the design of appropriate research strategies. Topics covered are experimental design, questionnaire and interview construction, and observation techniques. Prerequisite: previous course work in statistics.

203 Social Ecology of Sex Differences (4). Evaluation of research on sex differences in physiology, psychology, and social behavior from the prenatal period through adulthood. Topics include intelligence, moral reasoning, achievement, prosocial behavior, aggression, and mental health. Examination of psychological and biological theories of sex differences.

204 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.

205 Issues in Social Psychology (4). Provides in-depth treatment of theoretical and empirical work relevant to selected topics in social psychology. Theories of attitude change, group dynamics, and attribution are applied to such problems as overpopulation, environmental degradation, media violence, and racial conflict.

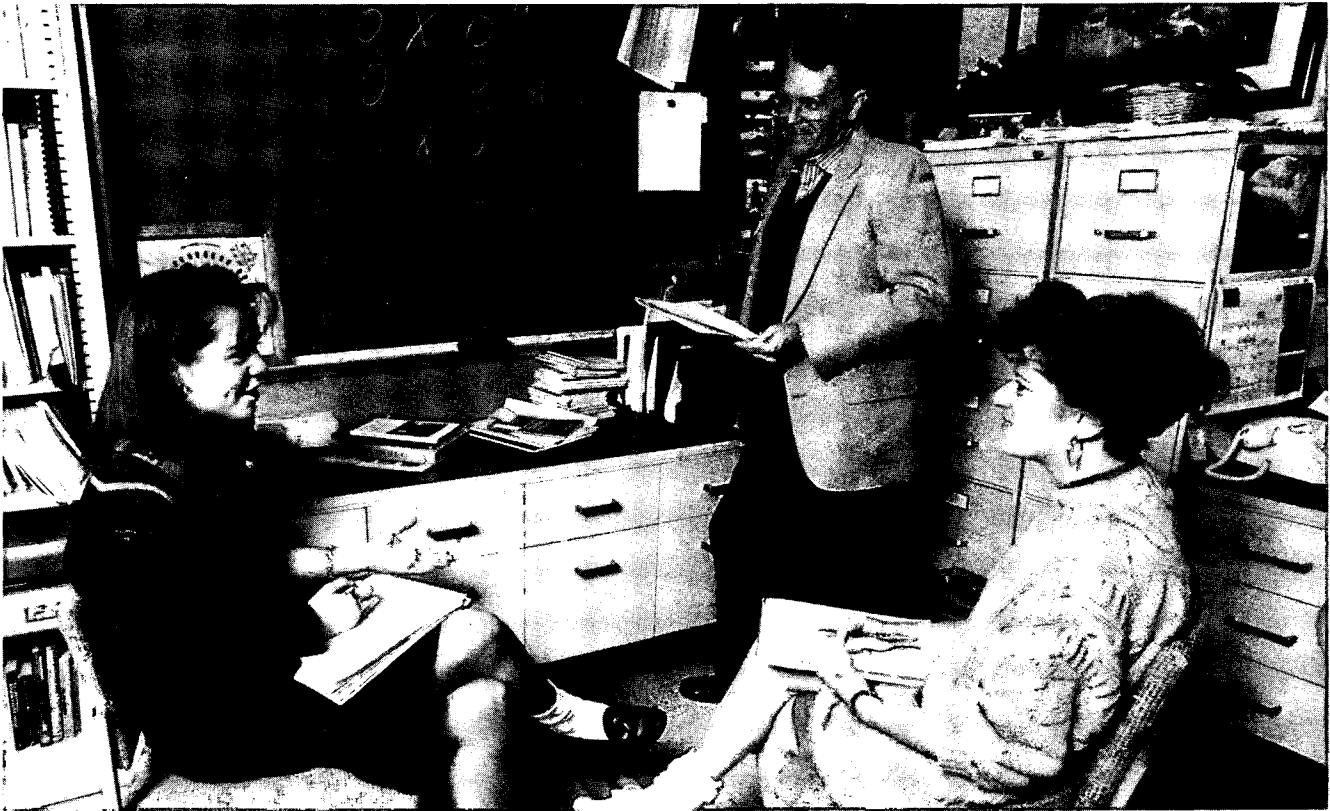
206 Perceptions of Environmental and Health Risks (4). In-depth discussion of nonexpert assessment of risks presented by environmental carcinogens, technologies, natural hazards, and chronic and infectious diseases. Examines how the public interprets and uses aggregate risk/health data, and the role of cognition and emotion in risk perception. 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 or consent of instructor.

208 Landscape Alternatives in Tourism Management (4). Concepts and designs in landscape ecology, landscape architecture, and cultural geography. International tourism and resort development as new catalysts of cultural landscapes. Landscape representation, transformation, conservation, interpretation, and marketing in international tourism. Interdisciplinary and international approaches to environmental and tourism management. Prerequisite: graduate standing or consent of instructor.

209A-B-C Practicum in Health Psychology (2-2-2). Explores research and practice in the field of health psychology, focusing on scientific and professional issues. Topics include assessment and diagnosis; communication skills; intervention approaches; collaboration, consultation, and referral; and ethical issues associated with at-risk populations research. In-progress grading fall and winter quarters. Prerequisite: consent of instructor.

210 Seminar in Community Psychology (4). The historical development of community psychology and various models for its practice are described. An analysis of the persistence of problems within social systems is linked to social intervention strategies. The impact of the social environment on physical and psychological health is studied as a function of contemporary stress factors.



Professor C. David Dooley, Associate Director of Undergraduate Studies for the Program in Social Ecology, helps students plan their program of study in order to meet degree requirements and career or advanced education goals.

211 Attitude Theory and Research (4). Survey of theory and research on attitude organization and change. Topics include attitude measurement, ideology and the organization of belief systems, stereotypes, communication and persuasion research, theories of attitude change, and the relationship between attitudes and behavior. Prerequisite: graduate standing or consent of instructor.

212 Work Environments, Health, and Productivity (4). Examines scientific evidence for the health and productivity impacts of physical and social features of work environments. Considers spatial, visual, acoustical, and climatic properties of work settings, and their social, technological and cultural dimensions. Discusses planning and management policy implications. Prerequisite: graduate standing or consent of instructor.

213 Issues in Social Intervention (4). Issues in assessment and design of social interventions are covered. These include systems analysis in social settings, role of the social interventionist, problems of entry, assessment of systems ranging from small group through the community, and planning of social change.

214 Introduction to Survey Research (4). Overview of survey research methods. Topics covered include historical background, constraints and biases of survey research, and in-depth study of factors involved in the development, administration, and analysis of surveys.

215 Epidemiology and Biostatistics (4). Presents descriptive and experimental approaches to the recognition of the causal association of disease for the occupational setting, as these approaches apply to populations using different study designs and models from the literature, and with frequent assistance of laboratory methods. Same as Environmental Toxicology 270.

216 Preventive Medicine (8). Introduction to preventive medicine. Explores the descriptive and experimental approaches to recognizing causal associations of disease through the fields of biostatistics, epidemiology, health administration and occupational medicine.

217 Qualitative Research Methods in Environmental Design (4). Explores the nature and varieties of qualitative inquiry and qualitative methodology. Includes a brief look at ethnography, ethnoarchaeology,

ethnomethodology, phenomenology, critical approaches, hermeneutics, case studies, and action research. Prerequisite: graduate standing or consent of instructor.

218 Infancy (4). Covers development from conception through the second year. Focus is on research and theory pursuant to infants' physical, social, cognitive, perceptual, emotional, and language development. Also covers transition to parenthood and social policy issues. Prerequisite: graduate standing or consent of instructor.

219 Learning and the Control of Behavior (4). Principles and theories of classical and operant conditioning from laboratory experiments and demonstrations of the extensions of such studies into more clinical settings. Review of criticisms of learning theory applications. Repeated review of whether there is a learning theoretical basis to behavior control.

220 Principles of Human Development (4). Examines key concepts and research methods in the study of life span development. Considers different models of development; contextual and ecological perspectives; the nature of plasticity; continuity and change over time. Introduces research designs and statistical procedures for studying human development.

221 Clinical Child Psychology (4). Examines research and theory concerning childhood psychopathology. Topics include research methodologies; diagnosis and assessment; early identification of high-risk children; fears and anxiety disorders; conduct and attention deficit-hyperactivity disorders; childhood psychoses; depression and suicide; children's rights and child policy. Prerequisite: graduate standing or consent of instructor.

222 Seminar in Populations (4). Introduction to the interrelationships between population and social organization. Considers measurement and explanation of historical and contemporary trends in birth rates, death rates, migration, marriage, and divorce. Case material primarily from the U.S. and other industrialized nations.

223 Seminar in Urban and Regional Analysis (4). Analysis of patterns of long-term urban and regional evolution with respect to population, sectoral economic change, economic development, and major shifts in the urban metropolitan and regional structures. Analysis of patterns of industrialization at the national and international scales and their impact on

urban and regional economies and societies. Conceptual and empirical models developed to analyze these trends are examined and discussed.

224 Methods in Social Epidemiology (4). Overview of advanced correlational methods including introductions to path analysis, ecological fallacy and cross-level inference, time-series analysis (including both least-squares and Box-Jenkins methods), cross-lag panel correlational analysis, and structural equation modeling (e.g., LISREL). Prerequisite: graduate standing or consent of instructor.

225 Late Adulthood and Aging (4). Examines sociocultural and environmental influences on the social roles, behavior, and personal adjustment of middle-aged and older adults. Topics include changes in age composition and structure of populations, the functions of work and leisure, support systems, health care, and prospects for social intervention. Prerequisite: graduate standing or consent of instructor.

226 Youth and Society (4). Overview of current research and policy issues pertaining to adolescents and young adults. Topics include schooling and the failure of the schools; consequences of employment and unemployment; major currents in research on adolescence and in the policy domain; and the possible need for a national youth policy.

229 Assessment Methods in Child Development (4). Examination of the historical backgrounds, rationales, and applications of standard methods for assessing the development of children from infancy through adolescence. Extensive training in the use of some of these methods is included.

231 Psychosocial Dimensions of Chronic Illness (4). Social, psychological, and economic factors contributing to quality of health care delivery examined in relation to a prototypic chronic disease. Discussion of biological complications, medical approaches, lifestyle modifications, and psychosocial problems.

232 Seminar in Juvenile Delinquency (4). Examines the major theories of juvenile delinquency, prevention and control programs, and the administration of juvenile justice.

233 Personality in Development, Society, and Pathology (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.

234 Childhood (4). Development of children from two to 12 years of age, covering the areas of cognition, language, emotion, and social relations. Emphasizes recent research and contemporary theory and presumes some knowledge of theories and basic principles of development. Social Ecology 218 and 220 recommended as prerequisites.

235 Theories of Crime (4). Examines the positions of thinkers such as Bentham, Freud, Marx, Lombroso, Sutherland, as well as those of the current labeling theorists, who believe that crime is primarily a function of the distribution of power and of tactics of the strong denigrating acts of the weak.

236A-B Issues in Human Development (2-2). Examines selected issues that have current research salience and policy significance, including day care, parental employment and family functioning, sex differences in adults' well-being, developmental psychopathology, and the importance of social ties among the elderly. Emphasizes key ongoing debates. Prerequisite: Social Ecology 220 or consent of instructor.

237 Violence and Its Social Impact (4). Reviews the history of violence in our society and its effect on communities and social institutions. Violence is presented in terms of theories of aggression and of crime as applied to the behavior of individuals, groups, and corporations. Suggestions are made for social policy regarding violence prevention.

238 Seminar in White-Collar Crime (4). Examines the illegal behavior of individuals who commit crimes in the course of their employment. Special attention is paid to ways in which power and organizational structure affect the behavior of the white-collar offender. Prerequisite: consent of instructor.

239 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.

240 Law and Social Change (4). Examines laws and legal institutions and their interaction with society focusing on the issue of change. Law as a product of social change and law as a source of social change.

241A-B Seminar on Environment, Development, and Health (2-2). Highlights developments in environmental, developmental and health psychology, urban sociology, and public health. Emphasizes mental health aspects of person-environment transactions.

244 Toxic Substances in the Environment (4). Examines sources, distribution, and cycling of toxic substances in the general environment, with emphasis on patterns of human exposure and mechanisms of damage. The toxic-substance standard-setting process is explored.

245 Social Science and the Legal Process (4). Examines social science methods for understanding and affecting the legal process. Emphasizes a current legal issue. The class provides, through its research and legal analysis, input into the adjudication of the issue under consideration.

248 Research on Subjective Well-Being (4). References to psychological well-being are abundant in the social science literature, yet the meaning of this global term differs dramatically across investigators. Examines alternative theoretical conceptions of psychological well-being and evaluates a variety of different measurement approaches. Prerequisite: graduate standing or consent of instructor.

250 Metropolitan Analysis Seminar (4). Students are introduced to sources of data which they will collect to test hypotheses concerning urban systems.

251 Seminar in Qualitative Criminological Analysis (4). 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.

252 Issues in Environmental Law and Policy (4). Treatment of legal and policy strategies of 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: consent of instructor.

253 Urban Planning (4). A survey of the models of urbanism assumed by professional planners and of the tools and powers at their command. Students assess the likely effectiveness of planning efforts given those tools and the complexity of urban dynamics.

254 Seminar on the Regulatory Process (4). Multidisciplinary investigation of the regulatory process. Topics include analysis of objectives of regulation; legal overview of the process in administrative law and organizational and historical overview. Examples include economic and environmental regulation. Same as Management 286.

257 Social Indicators (4). A survey of the social indicators literature and presentation of individual projects attempting to devise indicators of social phenomena.

258 Seminar in Health Psychology (4). Interdisciplinary exploration of emerging fields of health psychology and behavioral medicine. Topics examined are: (a) role of stress in the development and treatment of medical problems; (b) sociocognitive determinants of health and illness; (c) interpersonal health transactions, e.g., physician-patient communication processes and role relationships; (d) behavioral approaches to medical problems such as diabetes, obesity, and hypertension. Focus on recent research findings, methodological strategies, and directions for future research.

259 Theories of Punishment (4). Introduction to the modern theories upon which criminal punishments are based, and how such purposes are met in the criminal justice system. Problems in systems of punishment including sentencing disparities and the punishment of white-collar and corporate crime.

260 Seminar on Teaching (4). Examination of the teaching process; research and theory of teaching as a discipline. Considerable attention given to the teaching process utilizing experiential techniques including analysis of video tapes of class members working as Teaching Assistants. Satisfactory/Unsatisfactory Only.

261 Strategies of Theory Development (4). The goals of this course 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.

262 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: consent of instructor.

264A-B Data Analysis (4). Course 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.

266 Structural Equation Modeling (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.

267 Human Stress and the Environment as Stressor (4). Sources of stress from the biological, psychological, social, and physical environments are examined with respect to their impact on personal health, behavior, and the functions of social systems. Stress is presented as a multidimensional concept that can profitably be studied by an ecological analysis of determinants and outcomes.

268 Seminar in 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.

271 Research Practicum in Environment, Development, and Health (4). A research practicum for postdoctoral and doctoral students. Seminar provides substantive discussion of student research topics and assistance in the completion of a grant proposal.

273 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.

274 Seminar on Urban Sociology (4). Survey of current issues in urban sociology, including urbanization, city-hinterland relations, urbanism, metropolitan growth, migration, local community, metropolitan organization, power structure, and urban social psychology.

275 Special Topics in Social Ecology (4). Topics covered vary with interests of the instructor. Prerequisite: consent of instructor. May be repeated for credit.

276 Seminar in Social Deviance (4). Provides an in-depth examination of the field of social deviance. Major perspectives are examined in relation to policy issues concerning causation and control of deviant behavior.

277 Seminar in Child Health Psychology (4). This seminar examines diverse psychological and social ecological contributions to health and illness in children. Psychological, interpersonal, institutional, and physical environmental dimensions are explored. The focus is on contemporary research findings, the pitfalls and promise of scientific methodologies, future research directions, and policy implications.

278 Research Seminar on Divorce (4). Seminar, three hours. Focus on the psychological impact of divorce and its consequent child custodial arrangements on parents and children. The psychological impact is viewed in the broader context of society, including economic implications of divorce and societal changes that have accompanied the increase in divorce rate. Students participate in an empirical study of divorced families and attend lectures and discussions. Prerequisite: graduate standing or consent of instructor.

279A-B Pathways of Peace (4). Examination of plans to create an enduring world peace, reduce the risks of nuclear war, and assess the contributions of technology to peace. Emphasis on developing instructional materials.

282 Metals in the Environment (4). Examines the impacts of the use of more important metals on the environment and on individuals who work with them or who are environmentally exposed. Toxicological properties, techniques of analysis, and methods of control. Prerequisite: graduate standing or consent of instructor.

283 Seminar in Environmental Health and Quality (4). Concepts and principles of environmental health. Focuses on industrial hygiene, water and air quality, noise pollution, and environmental carcinogens. Past and present theory and implementation practices are discussed through review of legislative measures and enforcement procedures. The social and biological interactions surrounding each topic are examined.

284 Human Inference (4). Survey of research on human inference, judgment under uncertainty, and risk assessment. Focuses on how the cognitive strategies and heuristics people use to process information can sometimes lead to serious inferential errors and on how contextual factors influence judgment. Prerequisite: graduate standing or consent of instructor.

286 Demographic Perspectives on the Life Course (4). Examines the Western life course from preindustrial times to the present. Readings from history, demography, sociology, and psychology focus on the interplay of individual time, family time, and historical time as they affect living arrangements, marriage, childbearing, and work. Prerequisite: graduate standing or consent of instructor.

287 Employment and Family Functioning: Policy Issues (4). Examines the effects of current and potential policies on the well-being of working parents and their children. Focus on policy-making at various governmental levels and in the private sector. Prerequisite: graduate standing or consent of instructor.

288 Seminar in Environmental Psychology (4). Provides an overview of major theoretical and research perspectives within the field of environmental psychology. These perspectives are discussed in terms of their value for behavioral science projects launched in the community. Prerequisite: consent of instructor.

290A Applied Multivariate Statistics (4). Lecture, four hours; laboratory, two hours. Mathematical tools to organize and illuminate the multivariate methods. Multiple regression analysis. Multi-Dimensional Scaling and Cluster analysis. Statistical computing via MDS(x), BMDP, and SPSS. Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 201A.

290B Applied Multivariate Statistics (4). Lecture, four hours; laboratory, two hours. Conceptual overview of multivariate statistical methods. Criteria for appropriate use. Meaning of key measurements within methods. Statistical computing via MDS(x), BMDP, and SPSS. Prerequisites: Social Ecology 290A and graduate standing, or consent of instructor. Same as Social Sciences 201B.

290C Sampling Techniques and Estimation Methods (4). Review of confidence interval estimates derived from simple random samples followed by presentation of techniques for improving precision of sample-generated estimates that take account of realistic issues. Methods for dealing with bias and nonsampling errors. Prerequisite: Social Ecology 166A-B-C or equivalent. Same as Social Sciences 201C and Management 290.

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: Social Ecology 201 and two quarters of graduate-level statistics. Intended for students in the Ph.D. program.

292 Seminar in Evaluation Research (4). Intensive analysis of several issues in the field of evaluation research. Topics are drawn from current research issues involved in assessing the effectiveness of social reform projects (e.g., theory and models of evaluation research, role of evaluation researcher). Prerequisites: Social Ecology 201 and two quarters of graduate-level statistics, or consent of instructor.

293 Lead in the Environment and Society (4). The social ecology of lead use and presence in substance goods and the environment, examined from earliest prehistory to the present. Lead has particular impacts throughout human development. Public policy and surveillance are discussed. Guest lecturers. Prerequisite: graduate status or consent of instructor.

294 Seminar in Space Science Research (4). Examines the nature of problems during prolonged space flight aboard the proposed Space Station. Focuses on the enhancement and maintenance of human productivity in space. Guest speakers and NASA field trips. Prerequisite: Social Ecology E149 or consent of instructor.

295 Master's Thesis Research and Writing (4 to 8). Prerequisite: advancement to candidacy. Satisfactory/Unsatisfactory Only.

296 Doctoral Dissertation Research and Writing (4 to 12). Prerequisite: advancement to candidacy. Satisfactory/Unsatisfactory Only.

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.

School of Engineering

William A. Sirignano, *Dean*

305 Rockwell Engineering Center

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Graduate Counseling: (714) 856-6475

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Carlton H. Scott, Ph.D. The University of New South Wales, *Professor of Management and of Electrical and Computer Engineering*



Gary Scott Samuels, Professor of Mechanical and Aerospace Engineering, and graduate students monitor air-fuel ratios in the UCI Combustion Laboratory, a facility of the Irvine Research Unit in Combustion and Propulsion Science and Technology.

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David J. Yturralde, M.S. University of Washington, Seattle, *Lecturer in Civil Engineering*

The School of Engineering provides a stimulating academic environment for individuals interested in the application of science and the development of new technology for the benefit of society. Academic study combined with individual and group research projects prepare students for the professional practice of engineering. Programs of study at all levels emphasize fundamental principles in order to provide the basis for lifelong professional development as technology continues to evolve.

The School offers undergraduate majors in Civil Engineering (CE), Electrical Engineering (EE), Engineering (a general program, GE), and Mechanical Engineering (ME) with opportunities for specialization within each major. The majors in Civil, Electrical, and Mechanical Engineering are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology.

The study of 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 Environmental, Structural, Transportation, and Water Resources Engineering.

Electrical Engineering is a broad field of study centered on electronic instrumentation ranging from electric power distribution, to computers, to integrated circuits. Students have the opportunity to specialize in Computer Engineering, Electro-optics and Solid-State Devices, Power Systems, and Systems and Signal Processing.

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 fine arts. Formal specializations in Chemical Engineering and Computer Graphics are available, and students may construct their own specialization as well.

Mechanical Engineering considers the design, control, and motive power of machinery ranging from household appliances to spacecraft. Specializations allow students to focus their technical electives in the areas of Aerospace Engineering, Combustion/Propulsion, Heat Transfer/Fluid Mechanics, Materials Science and Engineering, and Mechanical Systems.

Graduate study is offered leading to the M.S. and Ph.D. degrees in Engineering with concentrations in Biochemical Engineering, Civil Engineering, Electrical and Computer 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, and water resources/environmental engineering. Research opportunities in Electrical Engineering are available in the areas of distributed computer systems, image engineering, machine vision, optical and solid-state devices, photonics, and manufacturing. 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 Engineering.

Additional publications describing undergraduate and graduate academic study and research opportunities are available through the School of Engineering, the Program in Biochemical Engineering, and the Departments of Civil Engineering, Electrical and Computer Engineering, and Mechanical and Aerospace Engineering.

Degrees

Civil Engineering.....	B.S.
Electrical Engineering.....	B.S.
Engineering.....	B.S., M.S., Ph.D.
Mechanical Engineering.....	B.S.

Honors

Graduation with Honors. Undergraduate honors at graduation in the 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.

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.

Additional awards in other categories are made throughout the academic year.

Undergraduate Program

Planning a Program of Study

Advising

Academic advising is available from academic counselors and peer advisors in the School's Undergraduate Student Affairs Office, 114 Rockwell Engineering Center, 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.* All Engineering students must consult at least once every year with the academic counselors. Students also are encouraged to consult with their faculty advisors. Mechanical Engineering and Civil Engineering majors are required to meet with their faculty advisor at least once each year and whenever they desire to change their program of study.

It is not uncommon for engineering students to need *more than four years* to obtain their B.S. degree, particularly if part-time employment or major extracurricular activities make heavy demands on their time. Occasionally students can catch up 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 double major. Early consultation with the School is advisable.

Students may substitute courses of their choosing for those required if they can substantiate the merits of the program of study and obtain prior approval from faculty of 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. Students must complete all of the required lower-division courses in the freshman and sophomore years in order to enroll in any upper-division Engineering course.

School of Engineering policy does not permit the addition or deletion of Engineering courses after the third week of the quarter. Individual instructors may have more stringent add/drop policies; students should request a statement of the instructor's policy at the beginning of each quarter's class.

Qualified undergraduate students who have high academic standing, who have completed the necessary prerequisites, and who have obtained permission from the School's Undergraduate Studies Committee may 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 BASIC, FORTRAN, and/or PASCAL) is expected in all Engineering courses.

Students in the School of Engineering, in accordance with general campus policy, are permitted to take courses in certain areas on a Pass/Not Pass basis. With respect to programs in Engineering, such areas are the breadth courses (*except* for courses taken in fulfillment of the UCI Subject A and upper-division writing requirements), free electives, and courses not submitted as fulfilling the graduation requirement.

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, 1992 must have submitted their completed application forms during the priority filing period (November 1–30, 1991).

High school students wishing to enter the UCI Engineering program are advised to have completed four years of mathematics and 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. Special attention will also be given to applicants who have submitted their SAT and three College Board Achievement Examination scores by mid-January, 1992. Applicants must apply for admission to a specific Engineering major.

If enrollment limitations make it necessary, unaccommodated Engineering applicants may be offered alternative majors at UCI.

Transfer students may be admitted to a program in the School of Engineering either from another major at UCI or from another college or university, including a community college. A student

seeking admission to the School of Engineering from colleges and schools other than UCI must satisfy the University requirements for admission with advanced standing and must have completed the appropriate prerequisites for the major they wish to enter. It is to the student's advantage to complete as much of the UCI breadth requirement as possible, or the entire UC Transfer Core Curriculum or Intersegmental General Education Transfer Curriculum, prior to transferring to UCI.

Since the requirements vary from major to major, those contemplating admission with advanced standing to the School should consult each Department's *Catalogue* section and the Office of Undergraduate Student Affairs, 114 Rockwell Engineering Center, (714) 856-4334, for the specific requirements of each program. All transfer students should arrange for early consultation with the Office so that a smooth transition can be planned.

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.

Undergraduate Acceleration toward the M.S. Degree in Engineering

Exceptionally promising seniors may, with permission of the Undergraduate Studies Committee, take graduate-level Engineering courses in addition to the undergraduate degree requirements. After attaining the B.S. degree and upon acceptance to the M.S. program in Engineering, the student may petition for application of up to eight units of excess credit toward the M.S. degree. If the petition is approved by the School and the Dean of Graduate Studies, the student could complete the M.S. degree in three quarters of residence as a graduate student even while serving as a teaching or research assistant.

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. The only extra cost is round-trip airfare. Additional information is available in the Education Abroad Program section.

Career Advising

The Career Planning and Placement Center provides services to UCI 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 Planning and Placement 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.

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, held each February, and in other School functions.

Associated General Contractors (AGC). A student chapter of the national organization, AGC at UCI is an academic engineering club for students interested in the construction field.

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 invitations to speakers from industry, tours of industries, and counseling for students by professional members.

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 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.

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.

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.

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.

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 Engineering Society (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.

Pi Tau Sigma. The mechanical engineering honor society, Pi Tau Sigma is committed to recognizing those of high achievement. The aim of the organization is to develop the complete engineering student through academic and social activities.

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.

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.

Requirements for the Bachelor's Degree

University Requirements: See pages 50–53.

School Requirements: The minimum subject matter requirements for graduation are: 24 units of mathematics; 28 units of basic science; 61 units of basic Engineering, departmental core, and technical electives; and a variable number of free electives, depending on the major. Specific information about courses fulfilling these requirements is included in the Departmental requirements section for each major. Note that some majors may require more units than the School requirements.

Design Units: All undergraduate Engineering courses have both a total and a design unit value. Design unit values are indicated at the end of the course description, with the exception of Electrical and Computer Engineering courses. Each student is responsible for the inclusion of courses whose design units total that required by the program of study.

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 Undergraduate Student Affairs Office.

Graduate Study

Admissions

For information on requirements for admission to graduate study at UCI, contact the appropriate Engineering department or the Graduate Affairs Office in the School of Engineering. Additional information is available in the *Catalogue* section entitled Research and Graduate Studies. Admission to graduate standing in the School of Engineering is generally accorded 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 admitted to full graduate standing. Those admitted from an allied field may be required to take supplementary upper-division courses in basic engineering subjects.

The Graduate Record Examination General Test is required of all applicants.

Financial Support

Teaching assistantships and fellowships are available to qualified applicants (who should contact the Department to which they are applying for information). Research assistantships are available through individual faculty members. It is beneficial for applicants to contact the faculty member directly to establish the potential for research support. Early applications have a superior 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 residence 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 the graduate coordinator in the School of Engineering and the approval of the chair of their program. M.S. programs must be completed in four calendar years from the date of admission. Students taking courses in University Extension should consult the section on Transfer of Courses below.

Transfer of Courses

Upon petition, a limited number of *graduate-level courses* taken through University Extension, on another campus of the University, or in another accredited university may be credited toward the M.S. degree after admission. With the exception of work undertaken in another graduate division of the University of California, transfer credit will not be applied to the minimum required units in 200-series courses.

Undergraduate Major in Engineering

114 Rockwell Engineering Center; (714) 856-4334

Lecturers

Brad J. Henderson: Oral and written technical communication
Frederick G. Sawyer: Oral and written technical communication

The School of Engineering offers an 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 three departments. Formal specializations in Chemical Engineering and Computer Graphics also are available within the major. 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. The Engineering major is unaccredited.

Admissions

The major in Engineering is open to junior-standing students who have completed the required lower-division courses with a high level of achievement. 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 seeking admission to the Engineering major are expected to have completed two years of mathematics study that includes calculus, differential equations, and linear algebra; one year of engineering physics (with laboratory); one year of chemistry (with laboratory); and one year of English composition prior to transferring to UCI. Students should work closely with their academic counselor, or contact the UCI Transfer Student Services Office, to ensure that they are enrolled in the appropriate courses.

Requirements for the Bachelor's Degree in Engineering

Credit for at least 180 units including:

University Requirements: See pages 50-53.

School Requirements: See page 297.

Departmental Requirements:

Mathematics Courses: Mathematics 2A-B-C-D, 3A, and 3D (24 units).

Basic Science Courses: Chemistry 1A-B-C and 1LAE-LBE and Physics 5A-B-C and 5LB-LC (28 units).

Basic Engineering Courses: Engineering E10 or ECE11A, E30, E50, E80, ECE70 or ECE72, ME54, and ME91 (25 units).

Engineering Core Courses: Engineering CE150 and ME130A (9 units).

Technical Electives: The courses required in an area other than the two formal specializations are determined in consultation with a faculty advisor (34 units).

Free Electives: Additional courses to meet the unit requirement for graduation (16-24 units).

Specialization in Chemical Engineering: Technical and free electives must include Engineering E40, E110, E120A-B, E120LA-LB, E122, E162, E163, and BE160 (42 units).

Specialization in Computer Graphics: Technical and free electives must include Mathematics 105A, 105B, and 162A; Information and Computer Science 186, Engineering ME182, ME183, ECE104, ECE206, and ECE207 (36 units).

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 their faculty advisor. A sample program of study is available in the Undergraduate Student Affairs Office.

Courses in Engineering

Lower-Division

NOTE: With the exception of E1, the courses listed below are open only to students in the School of Engineering. All other majors must petition for permission to enroll.

Students who are interested in biochemical engineering should consult the undergraduate course offerings on page 300.

E1 Introduction to Engineering (1). Nature of engineering; preparation for profession; nature of civil, electrical, and mechanical engineering; related fields of engineering; employed engineer; ethical and legal aspects of profession; case studies in project design, implementation, and operation. Pass/Not Pass Only. (Design units: 0)

E2 Energy Sources, Energy Uses (4) F. Technical aspects of energy extraction, transport, use, and environmental effects. Devices for energy conversion. (Design units: 0)

E10 Computational Methods in Engineering (4) F, W, Summer. 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. E10 and Information and Computer Sciences 1A may not both be taken for credit. Prerequisite: Mathematics 2A. (Design units: 0)

E20 Energy and Society (4) F. 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)

E30 Statics (3) W, Summer. Forces, equilibrium, structures, distributed forces, friction, virtual work, moments of inertia. Prerequisites: Physics 5A, Mathematics 2A. (Design units: 0)

E40 Chemical 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 1C, and Physics 5C. (Design units: 0)

E50 Engineering Economics (4) F. Time value of money, methods of conducting economic analysis, cost concepts and costing, benefit cost analysis, sensitivity and risk analysis, economics of the organization. (Design units: 0)

E69 Energy Facilities Inspection (1-1) F, W, S. Inspection of power-generating stations of various types, oil and gas processing facilities, and end-use facilities. Prerequisites: E2 and consent of instructor.

E80 Dynamics (3) S, Summer. Rigid body dynamics, momentum, and energy principles; modeling and analysis of mechanical systems. Prerequisites: Physics 5A and Mathematics 2D. (Design units: 0)

E92 Engineering and Computer Science Laboratory (ECSEL) (0) F, W, S. 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, graduate study planning, and independent studies. Two to four units of workload credit only. Pass/Not Pass Only. Students may receive up to 12 units of credit. Same as Information and Computer Science 92. (Design units: 0)

E98 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

E101 Introduction to Engineering Thermophysics (3) F. Fundamentals and applications of engineering thermodynamics to engineering systems. First law (energy conservation), second law (entropy constraints), equations of state and property relations (e.g., the Clausius-Clapeyron relation). Conduction, convection, and radiation including applications to fins and heat exchange. Prerequisites: Physics 5B, Mathematics 3D, English and Comparative Literature WR39B-C. (Design units: 0)

E110 Chemical Engineering Thermodynamics (5) W. Basic concepts and use of the thermodynamic functions of free energy, enthalpy, and entropy; properties of pure and mixtures; application of thermodynamic equilibrium conditions to phase and chemical equilibria; thermodynamic processes and efficiencies. Corequisite or prerequisite: Chemistry 131A. Prerequisites: Engineering E40, Mathematics 2C or equivalent. (Design units: 0)

E120A Momentum Transfer (4) S. Macroscopic and differential mass balances; macroscopic and differential linear and angular momentum balance, mechanical energy balances; Ideal fluids, Newtonian and non-Newtonian fluids and turbulence. Applications to chemical processes. Prerequisites: Engineering E40 and Mathematics 3D. (Design units: 1)

E120LA Chemical Engineering Laboratory I (4) W. Experimental study of thermodynamics, fluid mechanics, and heat and mass transfer. Operation and evaluation of process equipment and data analysis. Corequisites or prerequisites: Engineering E110 and E120B. (Design units: 1)

E120B Heat and Mass Transfer (4) F. 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: E120A. (Design units: 1)

E120LB Chemical Engineering Laboratory II (3) S. Continuation of E120LA covering mass transfer operations such as distillation, absorption, extraction. Rate and equilibria studies in simple chemical systems with and without reaction. Study of chemical processes. Prerequisite: E120LA. (Design units: 3)

E122 Separation Processes (4) F. Application of equilibria and mass and energy balance for design of separation processes. Use of equilibrium laws for design of distillation, absorption, stripping, and extraction equipment. Design of multicomponent separators. Prerequisite: E120 or equivalent. (Design units: 3)

E162 Chemical Engineering Design (5) S. Application of chemical engineering science techniques to design of chemical processes. Introduction to the 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, and process safety. Prerequisites: E120B, E122, and BE160. (Design units: 5)

E163 Chemical Process Control (4) W. 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: E120B and BE160. (Design units: 1)

E169 Energy Systems Field Trip (3) Summer. A ten-day to two-week inspection trip to energy extraction facilities, large-scale energy users, research laboratories, and design offices. Prerequisites: E2 and E20 or consent of instructor.

E190 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. Prerequisites: junior or senior standing in Engineering and completion of the lower-division writing requirement. (Design units: 0)

E192 Ethical Issues in Engineering (4) S. Application of ethical theory to moral problems in engineering. Topics include exercise of conscience and free expression within corporations; basic professional obligations to the public; role of values in safety decisions; ethics codes; whistle-blowing. Case studies. Prerequisite: Completion of lower-division writing requirement. Same as Philosophy 172. (Design units: 0)

Graduate Study in Biochemical Engineering

516 Engineering; (714) 856-8290

Henry C. Lim, **Chair**

Faculty

Nancy A. DaSilva: Recombinant cell bioengineering

G. Wesley Hatfield: Molecular biology

Juan Hong: Biochemical engineering, bioseparations

Henry C. Lim: Bioreaction and bioreactor engineering

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 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 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 eight graduate-level courses (24 to 32 units), while students who enter without undergraduate preparation in chemical engineering are required to take four to seven additional prerequisite courses (Mathematics 105A-B-C, Chemistry 130A, and Engineering ME130A, BE150, BE160, and CE283). A detailed program of study for each entering student is formulated in consultation with a faculty 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 the completion of 36 units of study. Students may choose one of two routes: completion of an examination based on a research project and/or additional course work as prescribed by the graduate committee.

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: three courses (9 to 12 units) beyond those required for the M.S. program, acceptance into a research

group by the faculty advisor, successful completion of the Ph.D. preliminary examination, formal advancement to candidacy 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 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. Doctoral programs must be completed in seven calendar years from the date of admission.

Courses in Biochemical Engineering

Undergraduate

NOTE: The undergraduate courses listed below are open only to students in the School of Engineering. All other majors must petition for permission to enroll.

BE150 Introduction to Biochemical Engineering (4) F. 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 1A and Mathematics 2B. (Design units: 1)

BE160 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: course work in general chemistry or calculus, or consent of instructor. (Design units: 2)

Graduate

BE210 Chemical Engineering Thermodynamics (4) W or S. Advanced application of the general thermodynamic methods to chemical engineering problems. First- and second-law consequences, estimation and correlation of thermodynamic properties; phase and chemical equilibria. Prerequisite: ME101 or consent of instructor.

BE222 Bioprocesses (3) S. 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: Engineering BE150 or consent of instructor.

BE230 Transport Phenomena (4) S. 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.

BE240 Bioengineering with Recombinant Microorganisms (3) W or S. 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 or recombinant cell systems. Prerequisites: Engineering BE150, BE160, or consent of instructor.

BE250 Advanced Biochemical Engineering (4) W. Engineering studies of biological processes including enzyme reactions and fermentation processes with genetically engineered microorganisms and animal and tissue cells. Development of production and recovery processes for biochemicals. Prerequisites: Engineering BE150, BE160, or consent of instructor.

BE260 Reaction Engineering (4) F. Advanced topics in reaction engineering, reactor stability analysis, diffusional effect in heterogeneous catalysis, energy balance, optimization of reactor operation, dispersed phase reactors. Prerequisite: Engineering BE160.

BE262A Bioreactor Engineering I (3) W. Biochemical reactions and bioreactors of various types. Mathematical modeling of various biochemi-

cal reactions and design and analysis of various bioreactors. Prerequisite: Engineering BE160 or consent of instructor.

BE262B Bioreactor Engineering II (3) S. Analysis, optimization, and control of suspension and immobilized bioreactors and recombinant cell reactors. Prerequisite: Engineering BE262A or consent of instructor.

BE296 Master of Science Thesis Research (varies) F, W, S. Individual research or investigation conducted in preparation for the thesis required for the M.S. degree in Engineering. May be repeated for credit.

BE297 Doctor of Philosophy Dissertation Research (varies) F, W, S. Individual research or investigation conducted in preparation for the dissertation required for the Ph.D. in Engineering. May be repeated for credit.

BE298 Seminars in Biochemical Engineering (1) F, W, S. Presentation of advanced topics and reports of current research efforts in biochemical engineering. Required of all graduate students in Biochemical Engineering. Satisfactory/Unsatisfactory Only.

BE299 Individual Research (varies) F, W, S. Individual research or investigation under the direction of an individual faculty member. Prerequisite: consent of instructor.

Department of Civil Engineering

101 Interim Civil Engineering Facility; (714) 856-5333
Medhat A. Haroun, **Department Chair**

Faculty

Alfredo H.-S. Ang: Reliability engineering, structural and earthquake engineering

Gary L. Guymon: Water resources, geohydrology, mathematical modeling)

Medhat A. Haroun: Structural and earthquake engineering

R. (Jay) Jayakrishnan: Transportation systems analysis, traffic modeling

Michael G. McNally: Transportation modeling, travel behavior

Betty H. Olson: Aquatic microbiology, environmental chemistry, water resources

Terese M. Olson: Water resources, environmental chemistry

Gerard C. Pardo: Structural analysis, experimental structural dynamics

Jose A. Pires: Risk analysis, applied probability, geotechnical engineering

Wilfred W. Recker: Transportation modeling and urban systems

Stephen G. Ritchie: Transportation engineering systems, knowledge-based expert systems

Jan Scherfig: Water resources, treatment processes, reclamation, toxicity

Robin Shepherd: Structural dynamics, earthquake-resistant design

Roberto Villaverde: Structural and earthquake engineering

Jann-Nan Yang: Fatigue, reliability, maintainability, and control of structures

Lecturers

Tom W. Bogard: Construction project management

John M. Coil: Structural design and analysis

Eugene Colombini: Construction management

David J. Dimas: Engineering drawing and computer-aided drafting

L. James Ewing, Jr.: Water and wastewater systems, reclamation and reuse

Seb J. Ficcadenti: Concrete design

Peter S. Geissler: Legal aspects of engineering

Thomas F. Golob: Travel demand forecasting

Charles G. Gunnerson: Water resources quality

Alain E. Holeyman: Soil and slope stability

Fong-Ping Lee: Transportation, computer-aided engineering

John D. Leonard: Traffic control

Sherif A. Mourad: Fortran

John G. Rau: Economics

Richard O. Richter: Hazardous waste remediation

Glenn R. Roquemore: Geology

W. H. Scholz: Construction and project management

Mark H. Seits: Hydrology

Farhat Siddiqi: Foundation engineering, earth structures, and dams

Edward L. Stanton: Structural stability

Williston L. Warren: Surveying, computer-aided drafting

David J. Yturralde: Construction project management

Civil Engineering has been described as the art of harnessing the great powers of nature for the use and convenience of human beings. The success of this endeavor is evident all around us. The inhospitable arid plain which greeted the early settlers in Southern California has been transformed into a thriving metropolis 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 Environmental, Structural, Transportation, and Water Resources Engineering. Graduate opportunities are in three major thrust areas: structural analysis, design, and reliability; transportation and urban systems; and water resources and environmental engineering.

The career opportunities in civil engineering are varied as in any other discipline. 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.

Undergraduate Major in Civil Engineering

The program objective is to prepare civil engineering graduates for a career in the profession or for entry into graduate school. 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 295.

Transfer Students seeking admission to the Civil Engineering major are expected to have completed two years of mathematics study that includes calculus, differential equations, and linear algebra; one year of engineering physics (with laboratory); two quarters of chemistry (with laboratory); one course in computational methods (Fortran); and one year of English composition prior to transferring to UCI. In addition, it is strongly recommended that students complete a course in statics. Students should work closely with an academic counselor, or contact the UCI Transfer Student Services Office, to ensure that they are enrolled in the appropriate courses.

Requirements for the Bachelor's Degree in Civil Engineering

Credit for at least 192 units including:

University Requirements: See pages 50-53.

School Requirements: See page 297.

Departmental Requirements:

Mathematics Courses: Mathematics 2A-B-C-D, 3A, and 3D (24 units).

Basic Science Courses: Chemistry 1A-B and 1LAE-LBE, Physics 5A-B-C and 5LB-LC, and one course selected from Chemistry 1C, Physics 5D, 5E, or Biological Sciences 90 (28 to 30 units).

Basic Engineering Courses: Engineering E10, E30, E50, E80, CE1, CE5, CE54, and ME91 (30 units).

Civil Engineering Core Courses: Engineering CE105, CE125, CE131, CE131L, CE150, CE151, CE170, CE185, and ME130A (34 units).

Technical Electives: 16 units in one of the four specializations or in construction and project management; 8 units in an additional specialization or in construction and project management; and 8 units of unrestricted technical electives for a total of 32 units. The student's faculty advisor must approve the course selection.

Specialization in Environmental Engineering: Engineering CE130, CE164, CE165, CE166, CE173, and CE175.

Specialization in Structural Engineering: Engineering CE132, CE152, CE153, CE154, and CE155.

Specialization in Transportation Engineering: Engineering CE121, CE122, CE127, CE128, and CE129.

Specialization in Water Resources Engineering: Engineering CE130, CE171, CE172, CE173, and CE175.

Free Electives: Additional courses to meet the unit requirement for graduation (8 units).

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 Undergraduate Student Affairs Office can provide necessary guidance for satisfying the design requirements.

Sample Program of Study — Civil Engineering

	Freshman	Sophomore	Junior	Senior
Fall	Mathematics 2A E10 Breadth Breadth	Mathematics 2D Physics 5C, 5LC Chemistry 1A, 1LAE E50	CE105 CE125 CE150 Breadth	CE Elective CE Elective CE Elective Breadth
Winter	Mathematics 2B Physics 5A CE1 Breadth	Mathematics 3A Chemistry 1B, 1LBE E30 CE54	CE151 CE185 ME130A Breadth	CE Elective CE Elective Elective Breadth
Spring	Mathematics 2C Physics 5B, 5LB CE5 Breadth	Mathematics 3D E80 ME91 Science Elective	CE131, CE131L CE170 CE Elective Breadth	Capstone Design Course CE Elective CE Elective Elective

Students *must* obtain approval for their program of study and must see their faculty advisor at least once each year.

Program of Study

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 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 Undergraduate Student Affairs Office and with their faculty advisors.

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 Engineering focuses its graduate study and research program on three areas: structural engineering, including aspects of structural dynamics, earthquake engineering, and reliability and risk assessment; transportation systems engineering, including traffic operations and management, expert systems applications, travel behavior, and transportation systems analysis; and water resources and environmental engineering, including water resources, contamination management, and pollution control technologies.

Programs of study leading to the M.S. and Ph.D. degrees in Engineering are offered.

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.

Plan II: Course Work Option

The course work option requires the completion of 36 units of study, 30 of which must be in nonresearch graduate-level courses. The remaining six units may be earned as graduate-level individual research or upper-division undergraduate units.

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 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 Department.

There are no specific course requirements, 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 may consist of a preliminary examination), research preparation, formal advancement to candidacy by passing the qualifying examination, 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. Doctoral programs must be completed in seven calendar years from the date of admission.

The Institute of Transportation Studies

The Institute of Transportation Studies at Irvine (ITS-Irvine) is part of a multicampus research unit of the University of California. Several faculty studying transportation systems engineering in the Department of Civil Engineering participate in the Institute. Students choosing to focus their studies in transportation will find strong interdisciplinary opportunities between the Department and ITS-Irvine. See the Research and Graduate Studies section of the *Catalogue* for additional information.

Courses in Civil Engineering

Lower-Division

NOTE: The undergraduate courses listed below are open only to students in the School of Engineering. All other majors must petition for permission to enroll.

CE1 Engineering Drawing and Computer-Aided Drafting (4) W. Elements of engineering drawing and graphics. Introduction to graphic status and descriptive geometry. Computer-aided graphical analysis. Fundamentals of computer-aided drafting systems to construct drawings. Prerequisite: Engineering E10. (Design units: 0)

CE5 Land Measurements and Analysis (4) S. Introduction to surveying and land measurement. 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. Prerequisite: Engineering E10. (Design units: 0)

CE54 Civil Engineering Materials (4) W. Study of strength, stiffness, and other properties required of materials for engineering uses. Qualitative and quantitative characteristics of typical materials including Portland cement and bituminous cement concretes, steel, timber, glass-reinforced plastics, and other composites. Micro- and macro-material structure and behavior. (Design units: 0)

Upper-Division

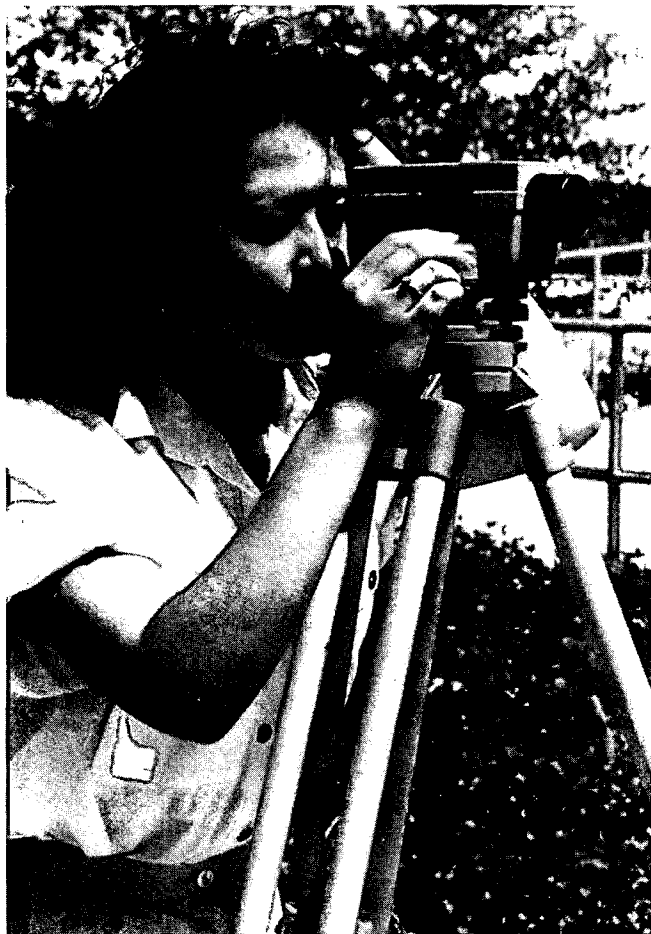
CE105 Civil Engineering Methods: Analysis of Uncertainty (4) F. Introduction to probability, statistics, and decision analysis for civil engineers. Consideration of uncertainties involved in engineering problems. Prerequisite: Mathematics 3A. (Design units: 0)

CE109 Civil Engineering Systems and Design (4) S. Introduction to procedures for planning, designing, and managing large-scale civil engineering systems. Emphasis on development of computer-based optimizing methods and on the economic and social forces and constraints of the environment in which large systems occur. Prerequisites: Engineering E10, E50. (Design units: 0)

CE110 Legal Aspects of Engineering (3) F. Overview of legal and ethical concepts. Topics include forms of business organization; contracts, with particular reference to construction and manufacturing activities; negligent and criminal conduct; labor and employee safety legislation; protection and transfer of intellectual property. Prerequisite: junior standing. (Design units: 0)

CE112 Introduction to Construction Project Management (3) W. Management concepts of a project from conception to start-up. Course project required. Prerequisite: upper-division standing. (Design units: 1)

CE113 Introduction to Construction Project Control (3) S. Concepts and methods required to monitor and control construction projects from conceptual through operational phases. Case study and project assignment.



Civil Engineering majors complete a common core of courses in fundamental subjects and then specialize in Environmental, Structural, Transportation, or Water Resources Engineering during their senior year.

Current industry practice emphasized. Prerequisite: upper-division standing. (Design units: 1)

CE120 Transportation Planning and Analysis (4) F. Fundamental concepts in planning, design, and management of transportation and urban systems. Topics: transportation planning process, travel demand analysis, system performance, and policy evaluation. Prerequisite: Engineering E50. (Design units: 1)

CE121 Transportation Forecasting I (4) F. Development of the theoretical foundations of models employed in the transportation planning and analysis process, and applications of these models to empirical data. Focuses on aggregate and disaggregate techniques of land use forecasting, trip generation and trip distribution. (Design units: 1)

CE122 Transportation Forecasting II (4) W. Emphasis on theory and applications of models of mode split, transportation supply, and highway networks. Techniques for project evaluation. Design and analysis of system alternatives for an urban area. Prerequisite: CE121 or consent of instructor. (Design units: 3)

CE125 Transportation Engineering (4) F. Introduction to analysis and design of fundamental transportation system components, such as highways and traffic systems, individual vehicle motion, basic elements of geometric design, vehicle flow and elementary traffic flow relations, capacity analysis, pavements and pavement management systems. Prerequisite: junior standing. (Design units: 2)

CE127 Traffic Engineering (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. Prerequisites: CE105, CE125. (Design units: 1)

CE128 Computer-Aided Geometric Design for Civil Engineers (4) S. Introduction to the use of computer-aided design techniques in the provision of efficient roadway alignments, gradients, and other features to accommodate the safe movement of traffic. Instruction based on the VANGO computer graphics system. Prerequisites: Engineering E10 and CE 125. (Design units: 4)

CE129 Traffic Control Laboratory (4) S. Introduction to the analysis, design, and management of traffic control systems. Application of traffic operations computer simulation models to the design of isolated intersection and coordinated traffic signal control systems. Prerequisite: CE127. (Design units: 3)

CE130 Geology for Engineers and Scientists (5) W. Principles of geology for engineers and applied earth scientists. Rock characteristics and formation, geologic structure, erosion, and groundwater. Interpretation of geological maps and geophysical data. Applications to geologic hazards such as earthquakes, slope stability, and tunnelling problems. Prerequisites: Chemistry 1B, Physics 5B, and junior standing. (Design units: 0)

CE131 Soil Mechanics (3) S. Mechanics of soils, composition and classification of soils, compaction, compressibility and consolidation, shear strength, seepage, bearing capacity, lateral earth pressure, retaining walls, piles. Prerequisites: CE150 and ME130A. (Design units: 0)

CE131L Soil Mechanics Laboratory (2) S. Laboratory procedures of soil testing for engineering problems. Corequisite: CE131. (Design units: 0)

CE132 Foundation Design (4) F. 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. Prerequisite: CE131. (Design units: 3)

CE150 Strength of Materials (5) F. With laboratory. Stress and strain. Analysis of gross internal forces (axial and shearing forces, bending and twisting moments) and stress and deformations which they induce in structural members. Prerequisite: Engineering E30. (Design units: 0)

CE151 Structural Analysis and Design (4) W. Fundamentals of structural engineering; deformations of statically determinate structures, stability of structural members, design of structural members (steel, reinforced concrete, and composite); and design and analysis of simple indeterminate structures. Prerequisite: CE150. (Design units: 2)

CE152 Computer Methods of Structural Analysis (4) S. Matrix techniques for indeterminate framed structures: flexibility and stiffness method. Computer techniques using the stiffness method. Structural dynamics of single, multi, and infinite degree of freedom systems. Computer techniques for frequencies and modes. Prerequisite: CE151. (Design units: 0)

CE153 Structural Design (4) F. Fundamentals of reinforced concrete, steel, timber design. Fundamentals of dead and live load factors. Design project which includes site planning, footing, framing, roof design of two-story tilt-up wall building. Prerequisite: CE151. (Design units: 4)

CE154 Reinforced Concrete Design (4) W. Ultimate strength design of systems of reinforced concrete beams, slabs, columns, and footings. Prerequisite: CE153. (Design units: 3)

CE155 Structural Steel Design (4) S. 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. Prerequisite: CE153. (Design units: 4)

CE164 Chemistry for Environmental Engineering (4) F. With laboratory. Basic concepts from general, physical, organic, and analytical chemistry as they relate to environmental engineering. Particular emphasis on the fundamentals of equilibrium and kinetics applied to acid-base chemistry, mineral and gas solubility, coordination, redox reactions, and adsorption. Prerequisites: Chemistry 1C; Engineering ME91 or consent of instructor. Same as Social Ecology E161. (Design units: 0)

CE165 Physical-Chemical Processes (4) W. Fundamentals and design of physical and chemical treatment processes for water and wastewater. Unit operations, such as coagulation, filtration, adsorption, ion exchange, membrane, gas-transfer, chemical oxidation, and disinfection processes. Applications to physical-chemical processes in natural waters. Design project included. (Design units: 2)

CE166 Microbial Processes (4) S. Fundamentals and design of biological wastewater treatment and disinfection systems. Topics include microbial growth energetics and kinetics, characterization, aerobic and anaerobic treatment processes, biofilms, and disinfection kinetics. Design project and laboratory included. (Design units: 2)

CE170 Hydraulic Systems (4) S. With laboratory. Analysis and design of turbomachinery, pipe networks, storm drainage, sewerage, open channel flow, controls, hydraulic appurtenances, irrigation and water supply systems. Computer applications and problems included. Prerequisite: ME130A. (Design units: 2)

CE171 Introduction to Hydrology (4) F. Analysis of hydrologic systems. Hydrological cycle, climate and meteorology, natural streams, rainfall-runoff relationships, flood hydrology, frequency/risk analysis, stream routing, groundwater hydrology, water supply and use. Mini-design projects and computer applications included. Prerequisites: ME130A and CE170; CE130 recommended. (Design units: 2)

CE172 Groundwater Hydrology (4) W. Introduction to analysis and design for groundwater problems. Topics include hydrological cycle, occurrence and distribution, Darcy's law, mass balance, aquifers, flow nets, resource testing and evaluation, geotechnical applications, groundwater contamination. Mini-design projects and computer applications included. Prerequisites: ME130A and CE170; CE130 recommended. (Design units: 2)

CE173 Water Resources Quality (4) F. Physical, chemical, and biological characterization of natural and wastewaters. Potable and irrigation water requirements. Reclamation and reuse. Local, state, and federal requirements. Sociopolitical and economic factors. Design project included. Prerequisites: Chemistry 1B and Engineering CE170. (Design units: 2)

CE175 Design of Water and Waste Treatment Systems (4) S. Design of unit processes for the treatment of water and wastewater. Concurrent introduction to materials and selection, design layout, mass balances, control systems, and plans and specifications. Field trip and projects included. Prerequisite: CE170. (Design units: 4)

CE185 Numerical Methods in Engineering (4) W. Numerical solution of problems occurring in engineering practice. Computational errors, direct and iterative methods for linear systems of equations, interpolation, differentiation, quadrature, nonlinear equations, least squares, differential

equations. Use of computers required. Prerequisites: Mathematics 3A and 3D. (Design units: 0)

CE198 Group Study (4-4-4) F, W, S. Group study of selected topics in engineering. Prerequisite: consent of instructor. (Design units: varies)

CE199 Individual Study (1 to 4 per quarter) F, W, S. For undergraduate Engineering majors in supervised but independent reading, research, or design. Prerequisite: consent of instructor. May be repeated for credit. (Design units: varies)

CE199 Individual Study for Honors Students (1 to 5 per quarter) F, W, S. Independent reading, research, or design under the direction of a faculty member or group of faculty members in Civil Engineering. Prerequisite: restricted to members of the Campuswide Honors Program who are Civil Engineering students. May be repeated for credit. (Design units: varies)

Graduate

CE206A Knowledge-Based Expert Systems I (3) W. Introduction to basic concepts and characteristics of knowledge-based expert systems in civil engineering. Scope of expert systems, difference from conventional computer programs, architecture, knowledge representation, knowledge engineering, building and expert system, development tools. Prerequisite: graduate standing or consent of instructor.

CE206B Knowledge-Based Expert Systems II (3) S of odd years. Advanced study of selected topics in building knowledge-based systems for civil engineering applications. Topics include: knowledge engineering, knowledge representation and architectures, techniques for reasoning under uncertainty, development tools; case study applications. Prerequisite: graduate standing or consent of instructor.

CE211 Management of Engineering Projects (3) F. Elements of an engineering project are defined and ways to organize and manage these efforts by utilizing project management are explored. Methods to plan, schedule, and budget engineering efforts and techniques for leading and controlling projects are addressed. Prerequisite: consent of instructor.

CE220A Travel Demand Analysis I (3) W. In-depth introduction to travel demand modeling techniques. Methods of multivariate data analysis examined in context of application in development of travel choice models including mode, route, destination choice. Prerequisite: knowledge of elementary probability and statistics.

CE220B Travel Demand Analysis II (3) S of even years. 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: CE220A.

CE221 Analysis of Transportation Supply (3) S. Analysis and modeling of performance characteristics and costs of transportation modes. Performance relations, cost models, analytic models, and simulation models of transportation modes and services.

CE222 Transit Systems Planning (3) F of even years. 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.

CE223 Transportation Policy Analysis (3) F of odd years. Transportation policy process and outputs at national, state, local levels. Major government institutions and interest groups, nature of decision-making system, transportation system development as function of policy evolution. Key policy issues in urban transportation.

CE224A Transportation Survey Methods (3) F of odd years. Data collection methods and principally survey sampling techniques for transportation planning and engineering. Survey planning, design, and administration. Sampling procedures, sample error and bias, survey instrument design. Case study examples. Prerequisites: knowledge of basic probability and statistics; graduate standing or consent of instructor.

CE224B Transportation Data Analysis I (3) F of even years. Statistical analysis of transportation data sources. Least squares and maximum likelihood estimation techniques. Advanced multivariate analysis methods such as clustering techniques, canonical correlation, and analysis of

covariance structures. Use of appropriate statistical model packages. Prerequisite: knowledge of basic probability and statistics; graduate standing or consent of instructor.

CE224C Transportation Data Analysis II (3) W. Advanced methods of statistical analysis of transportation data sources; causal modeling, factor analysis, analysis of covariance structures, structural equation models, use of selected statistical packages. Prerequisite: CE224B or equivalent.

CE225 Transportation and Urban Systems Analysis (3) F of odd years. Analytical techniques for the study of interactions between transportation systems design and the spatial distribution of urban activities. Development of models of demographic and economic activity, land use, and facility location. Forecasting exogenous inputs to existing transportation models. Prerequisite: introductory systems analysis.

CE226A Traffic Systems Theory (3) F of even years. Measurement and statistical representation of traffic characteristics. Speed-flow-concentration models and relationships to levels of service and highway capacity. Human elements. Car following and shock wave analysis. Application of queuing theory to traffic events; traffic flow simulation. Prerequisite: graduate standing or consent of instructor; knowledge of basic probability and statistics.

CE226B Traffic Systems Operations and Management (3) W of odd years. Operational analysis, planning, and management of arterial traffic systems. Application of traffic operations computer simulation models to single intersections and arterial traffic systems. Design of coordinated traffic signal control systems. Prerequisites: CE226A or CE127.

CE226C Freeway Operations and Analysis (3) S of odd years. Operational planning, analysis, and management of freeway traffic systems. Review of geometric design, flow models, and capacity analysis. Freeway operations: bottle necks, control systems, demand management policies. Freeway operation and analysis models; simulation and optimization. Prerequisites: CE226A or CE127.

CE227 Urban Operations Research (3) W of even years. Introduction to mathematical methods and models required to address logistically oriented urban development problems, such as bus and paratransit services, emergency services, and route selection. Techniques include geometrical probability, queuing theory, network theory, and simulation. Prerequisite: CE221.

CE228 Urban Transportation Networks (3) S of even years. 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.

CE229B Multi-Modal Transportation Planning (3) F. Transportation planning from a multi-modal perspective using the EMME/2 package. Network development, demand modeling, equilibrium assignment. Calibration and evaluation. Applications to impact and circulation studies as well as full scale regional modeling. Prerequisites: CE121 and CE122, or consent of instructor.

CE231 Foundation Engineering (3) W of even years. 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: CE131 or equivalent.

CE232 Soil Dynamics (3) S of even years. Wave propagation. Soil properties for dynamic loads. Effects of earthquakes on retaining walls, dams, and embankments. Dynamic behavior of footings and pile foundations. Liquefaction of soils. Machine foundations. Prerequisites: CE131, CE247.

CE233 Earth Structures and Dams (3) W. Fundamentals of slope stability, seepage, settlement, and hydraulic fracturing as they relate to earth structures and dams. Construction methods and foundation treatment. Rockfill dam design and analysis. Prerequisites: CE131 and CE131L, or equivalent.

CE234A Advanced Soil Mechanics (3) W. Discusses the soil properties and aspects of soil behavior essential for the design and construction of foundations and earthworks. Emphasizes the engineering significance and

design applications of soil properties such as a stress-strain properties and shear strength. Prerequisite: consent of instructor.

CE234B Soil Behavior and Constitutive Modeling (3) S. Characteristics of the mechanical behavior of soils. Formulation of constitutive laws for soils. Determination of mechanical properties from laboratory testing. Modeling of geotechnical problems. Prerequisites: CE131 and CE131L, or equivalent.

CE235 Engineering Geology in Geotechnical Practice (3) S. Studies the effects that lithology, geologic structures, and groundwater have upon engineering projects. Addresses river and coastal erosion, landslides, slope stability, underground construction, and site investigations. Prerequisite: CE130 or equivalent, or consent of instructor.

CE237A Soil Stabilization and Ground Improvement (3) F. General criteria for soil and site improvement will be reviewed with specific emphasis on modern in-situ deep improvement methods and mitigation of earthquake induced effects. Soil improvement methods covered include compaction, consolidation, grouting, cut-off walls, stabilization, and reinforcement. Prerequisite: consent of instructor.

CE238 Deep Foundations (3) W. Behavior and design of pile foundations in cohesive soils, cohesionless soils, mixed-soil profiles, and rock. Includes single piles and pile groups under compressive, lateral, and uplift loading conditions. Discusses site investigations, pile testing, pile installation, piling contracts, and specifications. Prerequisite: consent of instructor.

CE242 Continuum Mechanics (3) F. Deformation, displacement, vector, strain tensor. Compatibility. Velocity accelerations; strain-rate tensor. Stress tensor. Conservation of mass and energy, virtual work. Linear elasticity, fluid flow. Applications.

CE245 Experimental Modal Analysis (3) S. A thorough coverage of modal analysis techniques including digital signal processing concepts, structural dynamics theory, modal parameter estimation techniques, and application of modal measurement methods suitable for practical vibration analysis problems. Prerequisite: CE247 or equivalent.

CE246 Structural Performance and Failure (3) F. Case histories from the field of structural engineering failures are used to illustrate fundamental theoretical principles as well as many interrelated contributing causes including, but not limited to, design error, construction deficiencies, materials problems, and operational or maintenance faults. Prerequisite: consent of instructor.

CE247 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: Engineering E80.

CE248 Wind Engineering (3) S of odd years. Essentials for the determination of extreme wind loads on structures. Topics include basic characteristics of wind, engineering aspects of wind, wind loads on structures, wind hazard probabilities, and dynamic effects of wind. Prerequisites: CE105, CE247, or equivalents.

CE249 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.

CE250 Computational Methods in Structural Mechanics (3) S. Weighted residual methods and boundary integral equations, boundary element method, applications in potential and elasticity problems, nonlinear and time-dependent problems, critical evaluation of finite and boundary elements. Prerequisite: CE281.

CE251 Dynamics of Fluid/Structures Systems (3) W of odd years. Fundamentals of structural dynamics (time and frequency domains), fluid mechanics (potential flow and hydrodynamic forces), and numerical methods (finite elements and boundary solutions). Formulation of the general interaction problem with applications to ground-based and elevated tanks, dams, and off-shore structures. Prerequisite: consent of instructor.

CE253 Plates and Shells (3) S of odd years. Plates and shells as structural members, using classical differential equations and modern computer techniques. Topics include bending of circular and rectangular plates, shells of revolution, and cylindrical shells. Finite element computer practice. Prerequisite: consent of instructor.

CE254 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.

CE257 Advanced Structural Analysis (3) W. Flexibility and stiffness methods in the analysis of indeterminate structures. Computer-based techniques. Modeling of structural elements to simulate inelastic behavior. Static and dynamic analyses for lateral loading conditions. Prerequisite: consent of instructor.

CE258 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.

CE259 Structural Stability (3) S of even years. Introduction to structural stability emphasizing behavior of simple structural components that illustrate various modes of instability: Euler columns, beam columns, beam torsional and lateral instability, circular ring buckling. Elementary matrix methods compatible with the finite element models now used in industry for complex structures. Prerequisite: consent of instructor.

CE264 Chemical Equilibria in Natural Waters (3) W. Fundamentals of chemical equilibria applied to aqueous systems. Numerical and computer equilibrium models for acid-base reactions, metal complexation, multiphase systems, and redox reactions. Other topics include carbonate equilibria, alkalinity, sediment environments, eutrophication, and acid precipitation. Prerequisite: CE164 or consent of instructor.

CE265 Chemical Dynamics in Natural Waters (3) S of odd years. An introduction to chemical kinetics with applications to natural water systems. Rate expressions and reaction mechanisms in homogeneous and heterogeneous systems. Other topics include catalysis, reaction time scales in natural systems, and rapid kinetic analytical techniques. Prerequisite: CE164 or consent of instructor.

CE266 Aqueous Geochemistry (3) S of even years. Principles of mineral surface chemistry in aqueous systems. Topics include adsorption, surface charge theories, colloid stability, and computer equilibrium models. Soil mineralogy fundamentals. Geochemical processes, including mineral weathering, elemental cycles, salinization, and groundwater contaminant transport factors. Prerequisite: CE264 or consent of instructor.

CE269 Hazardous Waste Remediation (3) W. Emphasis on the theory and design of hazardous waste treatment systems. Overview of applicable environmental regulations and site characterization procedures. Use of case studies in selecting treatment technologies. Prerequisite: consent of instructor.

CE271 Unsaturated Flow in Soils (3) W of odd years. Theory and application of flow of fluid in the unsaturated zone (zone of aeration). Topics in soil-water physics, analysis of flows in regional groundwater basins, miscible displacement, mathematical modeling techniques. Prerequisite: consent of instructor.

CE272 Fluid Flow in Porous Media (3) F. Theory and application of dynamics of flow in porous media. Groundwater resources, evaluation and management. Well design and analysis. Dispersion of pollutants. Mathematical models. Prerequisite: CE170 or consent of instructor.

CE273 Water and Waste Treatment Technology (3) S. With laboratory. Water and waste pollution control. Physical, chemical, and biological treatment. Reuse of wastes and disposal of nonreusable wastes. Prerequisite: CE173.

CE274 Transport Phenomena in Porous Media (3) W of odd years. Fundamentals of transport in porous media, including mass, momentum, energy, and species transport. Development of macroscopic continuum equations from microscopic variables. Mathematical models at the macro-

scopic scale. Applications include single phase flow, solute transport, heat transport, multiphase flow, aquifer problems.

CE275A Numerical Methods in Subsurface Hydrology I (3) S of even years. Numerical solutions of problems in subsurface hydrology. Finite difference, finite element, and other methods are applied to ordinary differential equations, elliptic, parabolic, and hyperbolic partial differential equations arising from porous media phenomena. Emphasis on nonreactive transport phenomena in porous media. Well hydraulics, regional groundwater flow, multiphase flow, flow in unsaturated soils. Prerequisites: CE271, CE272, CE280, CE281, or consent of instructor; computer programming required. Formerly CE 275.

CE275B Numerical Methods in Subsurface Hydrology II (3) S of even years. Numerical solutions of problems in subsurface hydrology. Finite difference, finite element, and other methods are applied to ordinary differential equations, elliptic, parabolic, and hyperbolic partial differential equations arising from porous media phenomena. Emphasis on reactive transport phenomena in porous media. Operator splitting. Solute transport, multiphase multicomponent systems. Prerequisites: CE271, CE272, CE280, CE281, or consent of instructor; computer programming required.

CE276 Stochastic Geohydrology (1) S of odd years. Sources of uncertainty in modeling subsurface hydrology. Techniques for quantifying and reducing effects of uncertainty. Monte Carlo, spectral, perturbation, and moment methods. Kriging as best linear unbiased estimator. Turning bands and other random field generators. Some programming required. Prerequisites: CE272, CE283, consent of instructor.

CE278 Flow in Open Channels (3) F of even years. Mechanics of fluid motion in open channels, uniform and nonuniform flow, unsteady flow, flood routing, flow over movable beds, and sediment and mass transport. Numerical methods. Prerequisite: CE170 or consent of instructor.

CE279 Advanced Applied Surface Water Hydrology (3) F. Advanced principles of surface water hydrologic modeling. Topics include: rainfall-runoff simulation, precipitation, loss rate functions, rational methods, hydrograph methods, model calibration, complex watershed modeling, model uncertainty, local agency criteria. Prerequisite: CE 171 or consent of instructor.

CE280 Computational Methods and Software (3) F. Numerical methods and software for engineering and science. Emphasis on problem solving. Use of libraries and high-quality software. FORTRAN used extensively. Errors, linear systems of equations, interpolation, quadrature, nonlinear equations, ODEs, simulation. Prerequisite: consent of instructor.

CE281 Finite Element Method in Continuum Mechanics (3) W. Application of finite elements to continuum mechanics problems. Adaptation of finite element methods to the computer. Coded algorithms provided. Variational principle and Galerkin-based schemes. Element properties and matrix manipulations. Prerequisite: FORTRAN IV programming experience.

CE283 Mathematical Methods in Engineering Analysis (3) F. Tensors and matrices; eigenvalue problems; partial differential equations; boundary value problems; special functions; introduction to complex variables; calculus of variations and its applications.

CE284 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: CE105 or consent of instructor.

CE285 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: CE105 or consent of instructor.

CE286 Reliability of Engineering Systems II (3) S. Develops the basic concepts for the definition and assessment of safety and reliability of multiple failure mode systems. Includes probabilistic modeling of redundant and nonredundant systems, reliability assessment of brittle and ductile systems, and accident sequence analysis.

CE287 Random Vibrations (3) W of odd years. Stochastic response of linear, single, and multidegree of freedom systems. Probabilistic approach to dynamic response of structures to random loading such as earthquake and wind gusting. Prerequisite: consent of instructor.

CE288 Advanced Random Vibrations (3) S. Response of linear and nonlinear structures to random dynamic loadings. Applications to wind and earthquake engineering including seismic performance and damage analysis of structures. Prerequisite: CE287 or consent of instructor.

CE295 Seminars in Engineering (varies) F, W, S. Seminars scheduled each year by individual faculty in major field of interest. Prerequisite: consent of instructor. May be repeated for credit.

CE296 Master of Science Thesis Research (varies) 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.

CE297 Doctor of Philosophy Dissertation Research (varies) 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.

CE298 Special Topics in Civil Engineering (varies) F, W, S. Presentation of advanced topics and special research areas in civil engineering. Prerequisite: graduate standing or consent of instructor.

CE299 Individual Research (varies) F, W, S. Individual research or investigation under the direction of an individual faculty member. Prerequisite: consent of instructor.

Department of Electrical and Computer Engineering

305 Engineering; (714) 856-2395

Leonard A. Ferrari, **Department Chair (Acting)**

Faculty

Nader Bagherzadeh: Parallel processing; distributed computing; computer architecture; neural networks

Casper W. Barnes, Jr.: Signal processing, digital filtering

Harut Barsamian: High-speed computer architecture; special purpose architectures; software engineering; VLSI structures; fault-tolerant systems; parallel architectures

Behnam Bavarian: Control systems, robotics

Neil J. Bershad: Communication and information theory, signal processing

Lubomir Bic: Systems based on the principles of dataflow; architectures and languages for such systems; dataflow principles for database applications

Douglas M. Blough: Parallel architectures, distributed algorithms, fault-tolerant computing, computer networks

Thomas N. Cornsweat: Human vision, robotic vision, and electro-optical instrumentation

Jose B. Cruz, Jr.: Control of large-scale systems, decision strategies in large-scale systems, dynamic control of manufacturing systems

Rui J. P. de Figueiredo: Intelligent systems and robotics

Nikil D. Dutt: VLSI design automation tools, design methodologies, high level languages

Leonard Ferrari: Image and signal processing; computer graphics

Daniel D. Gajski: Parallel algorithms and architectures; silicon compilation; expert systems for design; science of design

Hideya Gamo: Quantum electronics and modern optics

Glenn E. Healey: Image engineering, computer engineering

K. H. (Kane) Kim: Distributed real-time computer systems, fault-tolerant computer systems, real-time learning systems

Fadi Kurdah: VLSI structures; design automation of digital circuits

Chin C. Lee: Solid state technology and devices, integrated and fiber optics, optoelectronics, acoustic microscopy

Guann Pyng Li: High-speed semiconductor technology, optoelectronic devices, integrated circuit fabrication

James H. Mulligan, Jr.: Solid state circuits, active networks, system theory

Orhan Nalcioğlu: Nuclear magnetic resonance imaging, digital radiography, computer tomography, and medical imaging

Alexandru Nicolau: Architecture, parallel computation, and programming languages and compilers

Robert M. Saunders: Energy conversion and electromechanical devices, control systems

Roland Schinzinger: Electric power systems, operations research, optimal design

Carlton H. Scott: Operations research and production management

Jack Sklansky: Pattern recognition, image processing, computer engineering

Gregory J. Sonek: Semiconductor integrated optics and optoelectronics; semiconductor materials characterization

Allen R. Stubberud: Control systems, estimation and optimization, digital filtering

Tatsuya Suda: Computer networks, distributed systems, performance evaluation

Harry H. Tan: Communication and information theory, stochastic processes

Chen S. Tsai: Integrated and fiber optics, acoustic microscopy, electro-optics, solid-state devices

Wei Kang (Kevin) Tsai: Data communication networks, parallel algorithms and architectures, system engineering

Stanley A. White: Signal processing

Lecturers

Maqsood Chaudhry: Field theory, numerical analysis, analog circuits

Benjamin Fisher: Communication theory

David Isaacs: System theory

Mohamed Kebaili: Integrated optics, robotics and control systems, microprocessors, and microcomputers

P. V. Sankar: Image processing and computer graphics

Mohamed Santana: Controls, electronics, and signal processing

Douglas T. Sherwood: Networks and signal processing

Martine J. Silbermann: Signal processing and automation

Kenneth Tierman: Circuits and systems

Electrical and Computer Engineering is a broad field encompassing such diverse subject areas as computers, control, electronics, digital systems, communications, signal processing, electromagnetics, and physics of electronic 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.

Some electrical engineers focus on the study of behavior of electronic devices and circuits that are the basic building blocks of complex electronic systems. Others study 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 the behavior of complex electronic systems such as computers, automatic controls, telecommunications, and signal processing. Of this latter group, those engaged in designing a variety of electronic computers and computer-based application systems are often called computer engineers.

The undergraduate curriculum in Electrical Engineering provides a solid foundation for future career growth, enabling graduates' careers to grow technically, administratively, or both. Many electrical 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.

Undergraduate Major in Electrical Engineering

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 are exposed to courses in network analysis, 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 Computer Engineering; Electro-optics, Solid-State Devices; Power Systems; and Systems and Signal Processing. In addition to the courses offered by the Department, the major program includes selected courses from the Department of Information and Computer Science.

Admissions

High School Students: See page 295.

Transfer Students seeking admission to the Electrical Engineering major are expected to have completed two years of mathematics study that includes calculus, differential equations, and linear algebra; five quarters of engineering physics (with laboratory); one course in chemistry (with laboratory); one course in computational methods (Pascal); one course in network analysis; and one year of English composition prior to transferring to UCI. Students should work closely with an academic counselor, or contact the UCI Transfer Student Services Office, to ensure that they are enrolled in the appropriate courses.

Requirements for the Bachelor's Degree in Electrical Engineering

Credit for at least 180 units including:

University Requirements: See pages 50-53.

School Requirements: See page 297.

Departmental Requirements:

Mathematics Courses: Mathematics 2A-B-C-D, 3A, and 3D (24 units).

Basic Science Courses: Chemistry 1A and 1LAE, Physics 5A-B-C-D-E and 5LB-LC-LD-LE (31 units).

Basic Engineering Courses: Engineering E80, ECE11A, ECE11B, ECE31, ECE31L, ECE70, ECE75, and ECE75L (24 units).

Electrical Engineering Core Courses: Engineering E101, ECE110A, ECE110LA, ECE110B, ECE110LB, ECE113, ECE113L, ECE120A, ECE120B, ECE140A, ECE140LA, ECE170, ECE180, and ECE186 (42 units).

Technical Electives: 18 units; students may select, with the approval of their faculty advisor, an area of specialization and complete the associated requirements, as shown below.

The technical electives requirement also may be fulfilled by completing courses from other science and engineering fields, with written approval of the faculty advisor.

Specialization in Computer Engineering: Engineering ECE132, ECE132L, and 11 units selected from ECE115A, ECE133, ECE133L, ECE134, ECE134L, ECE198 (Special Topics in Computer Architecture, VLSI Design, or Fundamentals of Computer Graphics), or ECE199 (up to 3 units).

Specialization in Electro-optics, Solid-State Devices: 11 units selected from Engineering ECE114A, ECE114B, ECE115A, ECE176, ECE176L, ECE177, ECE177L, ECE178, ECE178L, or ECE198 (Special Topics in Electro-optics or Solid State Materials/Devices).

Specialization in Power Systems: Engineering E2 and 12 units selected from E20, ECE140B, ECE160, ECE160L, ECE163, ECE163L, or ECE199 (up to 3 units).

Specialization in Systems and Signal Processing: 12 units selected from Engineering ECE128A, ECE135, ECE136, ECE140B, ECE163, ECE163L, ECE198 (Special Topics in Computer Graphics or Digital Signal Processing Laboratory), or ECE199 (up to 3 units).

Free Electives: Additional courses to meet the unit requirement for graduation (5 units).

Students should select their electives so that they aggregate a minimum of 26 design units. At least one of the Engineering courses taken to satisfy the graduation requirement should have more than 50 percent design content. Students should consult their academic counselor (114 Rockwell Engineering Center) or the ECE Department for the design unit value of each course.

Program of Study

Students must complete all required freshman and sophomore courses before they enroll in any junior or senior ECE courses.

Sample Program of Study — Electrical Engineering¹

	Freshman	Sophomore	Junior	Senior
Fall	Mathematics 2A Chemistry 1A, 1LAE Free Elective ² Breadth	Mathematics 2D Physics 5C, 5LC Free Elective ² ECE31, 31L	ECE75, 75L ECE113, 113L ECE180 Breadth	E101 ECE140A, 140LA Technical Elective
Winter	Mathematics 2B Physics 5A ECE11A Breadth	Mathematics 3D Physics 5D, 5LD Free Elective ² Breadth	ECE170 ECE110A, 110LA ECE120A Breadth	Technical Elective Technical Elective Breadth
Spring	Mathematics 2C Physics 5B, 5LB ECE11B Breadth	Mathematics 3A Physics 5E, 5LE ECE70 E80	ECE186 ECE110B, 110LB ECE120B Breadth	Technical Elective Technical Elective Breadth

¹ Sample program charts for students who began prior to fall 1989 are available in the Electrical and Computer Engineering Office and in the Undergraduate Student Affairs Office.

The sample program of study chart shown is typical for the accredited major in Electrical Engineering. 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 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 at least once every year with the academic counselors in the Undergraduate Student Affairs Office and are encouraged to consult with their faculty advisors once a year.

Graduate Study in Electrical and Computer Engineering

The faculty in the Department of Electrical and Computer Engineering are studying the following areas: computer engineering, including computer architectures and systems and computer-aided design of VLSI systems; optical and solid-state devices, including quantum electronics and optics, integrated electro-optics and acoustics, design of semiconductor devices, and scanning acoustic microscopy; and systems engineering and signal processing, including machine vision, computer graphics, signal processing, power systems, neural networks, communication networks, systems engineering, control systems, and manufacturing systems.

Because most graduate courses are not repeated every quarter, students should make every effort to begin their graduate program in the fall. Programs of study leading to the M.S. and Ph.D. degrees in Engineering are offered.

Master of Science Degree

The Department of Electrical and Computer Engineering offers two plans 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.

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 investigation; the writing of the thesis describing it; and approval of the thesis by a thesis committee. Of the required 36 units, a minimum of 20 units must be in nonresearch, graduate-level courses.

The thesis option is available for those graduate students who might best benefit from intense concentration on a specific problem. For the thesis option, students (during the first quarter of the program and in consultation with their faculty advisor) are required to develop and obtain approval of a complete program of study. A committee of three full-time faculty members is appointed to guide development of the thesis and, when the thesis is approved, to administer an oral examination on basic principles and the thesis contents.

Plan II: Comprehensive Examination Option

The comprehensive examination option requires the completion of 36 units, 24 units of which must be in nonresearch, graduate-level courses. Candidates take the five Electrical and Computer Engineering core courses (ECE210A, ECE235, ECE240A, ECE279, and ECE287A) and a coherent set of courses in a specialization approved by their faculty advisor. In addition to the University's grade-point-average requirements, each of the core courses must be completed with a grade of B or better.

All M.S. students are required to enroll in the weekly departmental seminar, ECE294, for at least two quarters.

Doctor of Philosophy Degree

The doctoral program in Electrical and Computer 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 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 Department.

There are several milestones to be passed: admission to the Ph.D. program by the faculty; within one year of arrival on the campus, passage of a preliminary examination or similar assessment of the student's background and potential for success in the doctoral program; meeting departmental teaching requirements, which can be satisfied through service as a teaching assistant or equivalent; research preparation; formal advancement to candidacy through 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. 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. Doctoral programs must be completed in seven calendar years from the date of admission.

All Ph.D. students are required to enroll in the weekly departmental seminar, ECE294, for at least four quarters.

The Ph.D. preliminary examination contains two parts: a depth examination administered at the end of the first year of doctoral study by faculty in the student's area of specialization; and, preceding it, a breadth examination consisting of the General Record Examination Subject Tests in either Physics, Mathematics, or Computer Science. The results of the Subject Test must be made available to the faculty prior to the end of the winter quarter of the student's first year of study in the doctoral program. The Ph.D. preliminary examination may be repeated once.

Research in Image Engineering

Spanning the growing industrial-scientific spectrum of technologies which utilize visual images, image engineering synthesizes current research in a comprehensive way that may have far-reaching effects on fields such as manufacturing, fluid mechanics, structural vibrations, chemistry, cardiology, and radiology. This new concept in engineering could impact a range of industries from radar to pharmaceuticals, from medical imaging to computer-aided manufacturing, from vehicular guidance and inspection to electronic cameras. Participants include engineering firms and several academic disciplines at UCI. Further information is available from Professor Jack Sklansky, Director, Image Engineering Research, Department of Electrical and Computer Engineering, School of Engineering, University of California, Irvine, CA 92717.

Courses in Electrical and Computer Engineering

Lower-Division

NOTE: With the exception of ECE181A-B-C, the undergraduate courses listed below are open only to students in the School of Engineering. All other majors must petition for permission to enroll.

ECE11A Computational Methods in Electrical Engineering I (4) W. An introduction to computers and structured programming. Fundamentals of computer systems, operating systems, utility programs. In-depth study of a high-level programming language (currently PASCAL) through hands-on programming. Introduction to algorithm efficiency. Prerequisite: Mathematics 2A.

ECE11B Computational Methods in Electrical Engineering II (4) S. Structured programming techniques and their engineering applications. Analysis, design, and implementation of symbolic and numeric algorithms. Introduction to engineering software packages. Prerequisite: ECE11A.

ECE31 Introduction to Boolean Algebra and Digital Logic (4) F. Representation information. Introduction to computer organization and design. Binary systems: numbering and logic. Boolean algebra and simplification of boolean functions. Introduction to combinational logic: design procedure and analysis. Introduction to synchronous sequential logic: flip-flops, state representation and design procedure. Corequisite: ECE31L. Prerequisite: ECE11A. Engineering ECE31 and ICS 151 may not both be taken for credit.

ECE31L Introductory Digital Logic Laboratory (1) F. Laboratory to accompany ECE31. Corequisite: ECE31.

ECE70 Network Analysis I (3) S, Summer. Modeling and analysis of electrical networks. Basic network theorems. Sinusoidal steady state and transient analysis of RLC networks and the impedance concept. Prerequisites: Mathematics 2C, Physics 5B, ECE11A. Formerly Engineering E70.

ECE72 Electronics and Power Systems (3) S. Introductory concepts in electronics and power systems for majors in Mechanical Engineering. Circuits, network analysis, electrical power systems. Prerequisites: Mathematics 2C; Physics 5B; Engineering E10.

ECE75 Network Analysis II (4) F, Summer. Laplace transforms, complex frequency, and the s-plane. Network functions and frequency response, including resonance. Bode plots. Two-port network characterization. Corequisite: ECE75L. Prerequisites: ECE11A, ECE70.

ECE75L Electric Networks Laboratory (1) F, Summer. Laboratory to accompany ECE75. Corequisite: ECE75. Prerequisites: ECE11A and ECE70.

Upper-Division

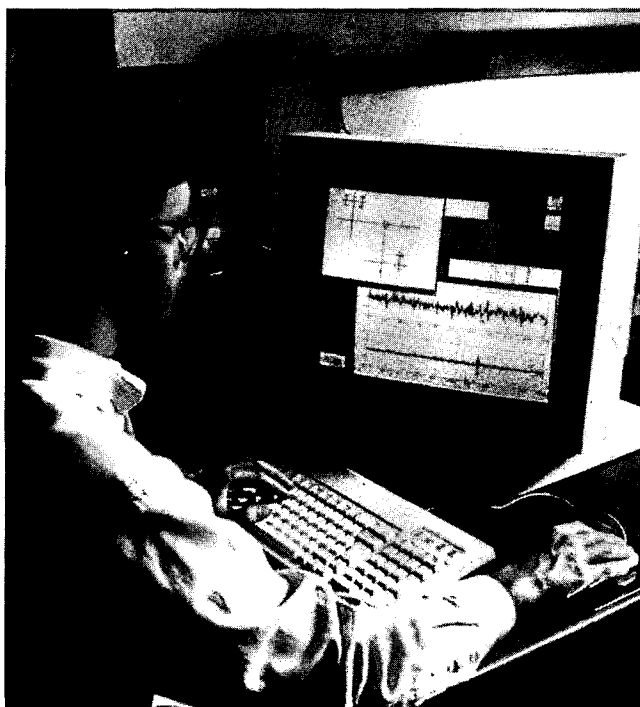
ECE104 Fundamentals of Computer Graphics (4) F. Instruction in the fundamental algorithms and data structures used in computer image generation and manipulation including: output primitives, linear transformations, windowing, hidden-line removal, and shading. Prerequisite: Mathematics 3D.

ECE110A Electronics I (4) W. Principles of operation and circuit models for junction diodes and bipolar and field effect transistors. Application of these models to the design of discrete and integrated electronic circuits for amplification, rectification, and signal generation. Corequisite: ECE110LA. Prerequisites: ECE75, 75L, and 113.

ECE110LA Electronics I Laboratory (1) W. Laboratory accompanying ECE110A. Corequisite: ECE110A.

ECE110B Electronics II (4) S. With laboratory. The principles of operation, design, and utilization of integrated circuit modules, including operational amplifiers, logic circuits, and pulse circuits. Typical applications to electronic system design. Corequisite: ECE110LB. Prerequisites: ECE110A, ECE110LA.

ECE110LB Electronics II Laboratory (1) S. Laboratory accompanying ECE110B. Corequisite: ECE110B.



Researchers in Professor Rui de Figueiredo's laboratory are working to improve artificial intelligence techniques used in passive sonar.

ECE111A Analysis and Design of Electrical Circuits (4) S. Active and passive electrical circuits. Topology, network theorems, sensitivity considerations. Classical synthesis and computer-aided techniques for two-, three-, and four-terminal networks. Prerequisites: ECE110B, ECE110LB, and ECE120B.

ECE113 Physical Electronics and Materials (4) F. Processes of electronic conduction in solids. Principles and properties of semiconductors, diodes, and transistors. Magnetic materials and superconductors. Corequisite: ECE113L. Prerequisites: ECE70, Physics 5D.

ECE113L Physical Electronics and Materials Laboratory (1) F. Laboratory accompanying ECE113 to enhance the understanding of semiconductor devices, physics, and electronic materials. Corequisite: ECE113. Prerequisites: ECE70, Physics 5D. Not offered 1991-92.

ECE114A Field-Effect Semiconductor Devices (4) F. Semiconductor theory, metal-semiconductor contacts and diodes, metal-oxide-semiconductor (MOS) structures; MOS field-effect transistors, junction field-effect transistors, device modeling and fabrication technologies. Prerequisite: ECE113.

ECE114B Bipolar Semiconductor Devices (4) W. PN-junction diodes, bipolar (NPN or PNP) transistors, photodiodes, light-emitting diodes, laser diodes, device modeling, and fabrication technologies. Prerequisite: ECE114A.

ECE115A Integrated Electronic Circuit Design (4) S. Specialized analysis and design techniques associated with the design of LSI and VLSI electronic circuits. Current approaches to computer-aided design and fabrication. Prerequisites: ECE110A, ECE110B, ECE131, and consent of instructor.

ECE120A Signals and Systems I (4) W, Summer. Studies of signals and systems. Application of Fourier series and Fourier and Laplace transforms to continuous-time system analysis. Convolution and modulation theory. Prerequisites: ECE75, ECE180. Not offered every summer.

ECE120B Signals and Systems II (4) S. Application of sampling theorem, z-transforms, and discrete Fourier transforms to discrete-time system analysis. Difference equations, discrete-time convolution. Prerequisite: ECE120A.

ECE128A Communication Systems (3) S. Introduction to analog and digital communication systems, including effects of noise. Modulation-demodulation for AM, FM, PM, and PCM, with applications to radio, television, and recorders. Signal processing as applied to communication systems. Prerequisites: ECE120B and ECE186.

ECE131 Logic and Switching Circuits (4) F. Introduction to digital computers. Numbers and codes, Boolean algebra, switching circuits, sequential networks, hardware forms, analysis and design problems. Corequisite: ECE131L. Prerequisites: ECE110B, ECE110LB. Note that ECE131 and Information and Computer Science 151A may not both be taken for credit.

ECE131L Logic and Switching Circuits Laboratory (1) F. Laboratory to accompany ECE131. Corequisite: ECE131.

ECE132 Logic and Organization of Digital Computers (4) W. Building blocks and organization of digital computers, the arithmetic, control, and memory units, and input/output devices and interfaces. Microprogramming and microprocessors. Corequisite: ECE132L. Prerequisites: ECE131, ECE131L. Note that ECE132 and Information and Computer Science 151B may not both be taken for credit.

ECE132L Digital Computer Laboratory (1) W. Laboratory to accompany ECE132. Corequisite: ECE132.

ECE133 Microprocessors (3) S. Covers microprocessor architectures and peripheral devices. Experience with a microprocessor system is provided. Functional requirements are realized through software and I/O hardware design. Corequisite: ECE133L. Prerequisites: ECE132 and ECE132L.

ECE133L Microprocessor Laboratory (1) S. Laboratory to accompany ECE133. Corequisite: ECE133.

ECE134 Fundamentals of System Software (4) W. Basic concepts of data structures and system programming techniques including loaders, linkers, assembler and file manipulations. Principles of design with assembly languages and high-level languages, e.g., C, PASCAL. Concepts are demonstrated for searching, sorting, algebraic calculations, and I/O operations. Corequisite: ECE134L. Prerequisite: ECE132.

ECE134L Systems Software Laboratory (1) W. Software design and programming work with assembly language and high-level languages (C or PASCAL), including main phases of system software development. Corequisite: ECE134.

ECE135 Digital Signal Processing (3) F. Nature of sampled data, sampling theorem, difference equations, data holds, z-transform, fast Fourier transform, w-transform, digital filters, Butterworth and Chebyshev filters, quantization effects. Prerequisites: ECE120B and ECE186.

ECE136 Machine Vision (3) F. 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. Prerequisites: ECE120B or consent of instructor.

ECE140A Introduction to Control Systems (4) F. Feedback control systems. Modeling, stability, and system specifications. Root locus, Bode, Nichols, and state-space methods of analysis and design. Corequisite: ECE140LA. Prerequisites: Engineering E80; ECE11B, ECE110B, ECE110LB, ECE120B.

ECE140LA Control Systems I Laboratory (1) F. Laboratory accompanying ECE140A. Corequisite: ECE140A.

ECE140B Sampled-Data and Digital Control Systems (3) W. 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: ECE131, ECE131L, ECE140A, ECE140LA.

ECE160 Energy Conversion (4) F. Magnetic circuits and transformers. Fundamentals of energy conversion. Application to synchronous, induction, commutator, and special purpose machines such as robotic actuators and computer disk drives. Corequisite: ECE160L. Prerequisite: ECE75.

ECE160L Energy Conversion Laboratory (1) F. Laboratory exercises supplementing the content of ECE160. Corequisite or prerequisite: ECE160. Prerequisite: ECE110LA.

ECE163 Electric Power Systems (4) F. Generation, transmission, and use of electrical energy. Fault calculation, protection, stability, and power flow. Corequisite: ECE163L. Prerequisite: ECE75.

ECE163L Electric Power Systems Laboratory (1) F. Experiments and field trips relevant to studies in power systems. Corequisite or prerequisite: ECE163. Prerequisite: ECE110LA.

ECE166 Power Electronics (4) S. Power switching devices; generic power electronic converters; design and applications of rectifiers, inverters, motor controllers, uninterruptible power supplies. Prerequisite: ECE110B.

ECE170 Engineering Electromagnetics (4) W. Electromagnetic fields and solutions of problems in engineering applications; reflection and refraction of plane waves, transmission line and guided waves, resonance cavity and radiation. Prerequisites: ECE113, Mathematics 3D.

ECE176 Engineering Optics (3) F. Fundamentals of optical systems design: incoherent light sources, lens, mirror, photodetectors, radiometry, image recording and display. Optical systems and components; resolution, modulation, transfer functions, and noise. Corequisite: ECE176L. Prerequisite: ECE170.

ECE176L Engineering Optics Laboratory (1) F. Basic optics and laser experiments. Lens, prism, grating, diffraction, interferences, He-Ne and CO₂ gas lasers. Corequisite: ECE176.

ECE177 Engineering Electrodynamics (3) S. Time-varying electromagnetic fields including waveguides, resonant cavities, radiating systems. Motion of charged particles in electromagnetic fields, radiation by moving charges. Scattering and dispersion. Corequisite: ECE177L. Prerequisite: ECE170.

ECE177L Engineering Electrodynamics Laboratory (1) S. Transmission line, waveguides, antenna microwave oscillators, and detectors. Corequisite: ECE177.

ECE178 Optical Electronics (3) W. Fundamentals of optical systems and components. Incoherent light sources, radiometry, resolution and transfer functions. Lasers and related optical devices and systems. Corequisite: ECE178L. Prerequisite: consent of instructor.

ECE178L Optical Electronics Laboratory (1) W. Optical guided waves, electro-optical modulator, acousto-optical modulator, dye and semiconductor lasers. Corequisite: ECE178.

ECE180 Electrical Engineering Analysis (3) F. Functions of complex numbers and their application to electrical engineering problems. Applications to lumped and continuous parameter engineering systems. Prerequisites: ECE75, Mathematics 3D.

ECE181A-B-C Mathematical Methods in Operations Research. Operations research forms the basis for rational decision making in the design and operation of complex (engineering) systems. Prerequisite: consent of instructor. Same as Mathematics 171A-B-C.

ECE181A Linear Programming (4) F. Simplex algorithm, duality, optimization in networks.

ECE181B Nonlinear Programming (4) W. Conditions for optimality; quadratic and convex programming, geometric programming, search methods.

ECE181C Integer and Dynamic Programming (4) S. Multistage decision models. Applications.

ECE186 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. Corequisite: concurrent enrollment in ECE120B. Prerequisite: ECE120A.

ECE198 Group Study (1 to 4) F, W, S. Group study of selected topics in engineering.

ECE198L Group Laboratory (1 to 4) F, W, S. Group laboratory for experimentation or design in connection with special projects or ECE198 courses. May be repeated for credit.

ECE199 Individual Study (1 to 4) F, W, S. For undergraduate Engineering majors in supervised but independent reading, research, or design. Prerequisite: consent of instructor.

Graduate

ECE206 Spline Theory and Applications (3) W. Mathematical background for three-dimensional realistic graphics, CAD/CAM, and geometric modeling. Polynomials, vector spaces, divided differences, B-Splines, Bezier Curves, and Beta Splines.

ECE207 Modeling and Rendering for Image Synthesis (3) S. 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.

ECE210A Active Networks I (3) F. Behavior of active networks subjected to analog and digital signals. Application to the analysis and optimum design of common electronic circuits used for processing analog and digital signals. Prerequisites: ECE110A-B or equivalent.

ECE210B Active Networks II (3) W. Analysis and optimum design of integrated electronic circuits and systems to process analog and digital signals. Performance limitations of bipolar and field effect integrated circuits, charge coupled devices; development of design methods for their effective utilization in analog, digital, and hybrid systems. Prerequisite: ECE210A or consent of instructor.

ECE212 Topics in Electronic System Design (3). New research results in electronic system design. Prerequisite: consent of instructor. May be repeated for credit.

ECE217A Advanced Semiconductor Devices I (3) W. Semiconductor theory, GaAs metal-semiconductor field-effect transistors (MESFET), microwave semiconductor devices, analog, and digital MESFET integrated circuits, device modeling and fabrication technologies. Prerequisite: ECE114A.

ECE217B Advanced Semiconductor Devices II (3) S. Photodiodes, light-emitting diodes, diode lasers, epitaxial growth of III-V compound semiconductors, and fiber optics technology. Prerequisite: ECE114A.

ECE222 Topics in Communications Systems (3). New research results in communications systems. Prerequisite: consent of instructor. May be repeated for credit.

ECE227A-B Detection, Estimation, and Demodulation Theory (3-3) W, S. Application of statistical design theory, state variables, random processes, and Ito calculus to deriving optimum receiver structures for signal detection, parameter estimation, and analog demodulation. Prerequisite: ECE287A.

ECE228A-B Communication and Information Theory (3-3) W, S. Communication over noisy channels; optimum receiver design; information theory concepts entropy, mutual information, encoding of information. Shannon's coding theorems, channel capacity, and implementation of some coded systems. Prerequisite: ECE287A or consent of instructor.

ECE229A Queuing Theory (3) F. Elementary queuing models; conservation laws; work. Markovian queues; product form results; embedded Markov chains. Fluctuation theory and GI/G/I queues. Approximation and bounds. Priority queuing. Prerequisite: ECE287A.

ECE229B Communication Networks (3) W. Review of elementary queuing models; Markov chains; passage times; approximations. Queuing models for networks; routing capacity assignment, flow control, priority, numerical methods. Models of local area networks, cellular radio networks, satellite networks. Analysis of multiple access schemes. Prerequisite: ECE229A.

ECE230A 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: ECE135, ECE240A, and ECE287.

ECE230B Digital Signal Processing II (3). Applications of digital signal processing, short-time spectral analysis, spectral estimation, optimal

filtering, autoregressive modeling, waveform quantization and coding, block processing, distributed arithmetic. Prerequisite: ECE230A.

ECE231 Advanced System Software (3). Study of operating systems including interprocess communication, scheduling, resource management, concurrency, reliability, validation, protection and security, and distributed computing for multiprocessors. System software design languages and modeling analysis. Prerequisite: ECE134.

ECE232 Intelligent Machines (3). Design of machines that recognize patterns, learn from mistakes, discover clusters in data, hypothesize and test conjectures, and compete for survival. Applications in industry, neural sciences in biology, and cognitive sciences in psychology are discussed. Prerequisite: ECE186.

ECE233 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: ECE132, ECE132L.

ECE234A-B Digital Image Analysis (3-3) W, S. Manipulation and analysis of images by computer. Digitization and compression; enhancement restoration and reconstruction; matching, description, and recognition. The level of treatment emphasizes concepts, algorithms, and (when necessary) the underlying theory.

ECE235 Digital Systems Theory (3) W. Discrete-state information systems. Basic mathematical tools such as groups, graphs, regular expressions, and phrase-structural languages. Discussion of applications of these tools to design of digital systems such as encoders and decoders, digital computers, and digital image analyzers. Prerequisites: ECE131, ECE131L.

ECE236 Digital Electronics I (3) S. Band theory of solid-state electronics; semiconductor devices, fabrication technology; nonlinear circuit analysis, analog-digital and digital-analog converters, magnetic memories. Prerequisite: ECE110A.

ECE237 Medical Imaging Systems (3) W or S. The physics and engineering of imaging the structures within the human body, including x-ray projection radiography, nuclear medicine, ultrasonic imaging, positron emission imaging, magnetic resonance imaging, computed tomography, and digital subtraction angiography. Prerequisite: ECE120A.

ECE238 Topics in Computer Engineering (3). New research results in computer engineering. Prerequisite: consent of instructor. May be repeated for credit.

ECE239A Adaptive Signal Processing (3) S. Study of adaptive signal processing algorithms and systems. Adaptation for stationary signals: the quadratic error surface and gradient estimation. Adaptive algorithms and structures. Applications: adaptive modeling and system identification, inverse adaptive modeling, deconvolution and channel equalization, adaptive interference cancellation, adaptive spatial processing. Prerequisite: ECE287A.

ECE240A Linear Systems I (3) F. State-space representation of continuous-time and discrete-time linear systems. Controllability, observability, stability. Realization of rational transfer functions. Prerequisite: ECE140A or equivalent.

ECE240B Linear Systems II (3) W. Continuation of deterministic linear multivariable systems. Linear state feedback and observers in continuous-time and discrete-time system control. Introduction to stochastic systems. Prerequisite: ECE240A.

ECE240C Linear Systems III (3) S. Continuation of stochastic linear multivariable systems. Kalman filtering, prediction, estimation, and smoothing. Prerequisite: ECE240B.

ECE241A Advanced Topics in Control Systems I (3) F. Numerical methods in control system optimization. Prerequisite: ECE240C. May be repeated for credit.

ECE241B Advanced Topics in Control Systems II (3) W. State of the art in system identification. Offered when sufficient demand. Prerequisite: ECE241A or consent of instructor. May be repeated for credit.

ECE241C Advanced Topics in Control Systems III (3) S. Latest developments in adaptive control. Offered when sufficient demand. Prerequisite: ECE240C or consent of instructor. May be repeated for credit.

ECE242 Topics in Systems and Control (3). New research results in system and control theory. May be repeated for credit. Prerequisite: consent of instructor.

ECE251 VLSI System Design (3). Overview of integrated circuit fabrication, circuit simulation, basic device physics, device layout, timing; MOS logic design; behavioral simulation; logic simulation; silicon compilation; testing and fault tolerance. Prerequisites: ECE115, ECE132.

ECE252 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: ECE231 and ECE233.

ECE260 Design and Control of Electromechanical Energy Converters (3). Advanced topics in the generalized theory of electrical machines. Design criteria and methodology, including analytical and numerical field analysis. Electronic control of generators and motors. With laboratory where appropriate. Prerequisite: ECE160 or consent of instructor. May be repeated for credit with consent of instructor.

ECE263 Planning and Operation of Electric Power Transmission Systems (3). Advanced topics in the planning, design, and optimal operation of electric power systems. Power flow under static and dynamic conditions. Stability. Economic dispatch. Transmission line transients. System expansion. Reliability. With laboratory where appropriate. Prerequisite: ECE163 or consent of instructor. May be repeated for credit with consent of instructor.

ECE270 Imaging Optics (3) S. Optical imaging instruments from geometrical and wave optic standpoints. Indirect optical imaging methods such as holography, interferometry, and intensity correlation interferometry.

ECE271 Statistical Optics (3). Temporal and spatial coherence of electromagnetic radiation. Statistics of photoelectrons generated by thermal radiation and laser beams. Wave propagation through fluctuating medium. Signal-to-noise ratio in photodetection.

ECE272 Engineering Quantum Mechanics (3). Basic quantum electronics for optical electronic devices.

ECE273A Quantum Electronics I (3) W. Semiclassical development of the theory and application of lasers and related optical electronic devices. Prerequisite: ECE170.

ECE273B Quantum Electronics II (3) S. Quantum theoretic development of the theory and application of lasers and related optical electronic devices. Prerequisite: ECE273A or consent of instructor.

ECE274 Quantum Optics (3). Quantum theory of electromagnetic field and its application to laser and related optical devices. Noise, photoelectron counting statistics, and intensity correlation interferometry.

ECE275A Electro-optic Devices (3) F. Review of basic laser principles. Optics in crystals. Electro-optic effects. Electro-optic devices and applications. Prerequisite: ECE170.

ECE275B Acousto-optic Devices (3) W. Bulk and surface acoustic waves, acousto-optic effects, acousto-optic Bragg diffraction, acousto-optic devices and applications. Prerequisite: ECE170.

ECE275C Integrated and Fiber Optics (3) S. Optical waveguides; passive and active guided-wave devices; integrated optics modules/circuits and applications; optic fibers; fiber optic devices; fiber optic communications systems; fiber optic sensors. Prerequisites: ECE275A and ECE275B.

ECE279A Advanced Engineering Electromagnetics I (3) W. Stationary electromagnetic fields, Maxwell's equations, circuits and transmission lines, plane waves, guided waves, and radiation. Prerequisite: ECE170 or equivalent.

ECE279B Advanced Engineering Electromagnetics II (3) S. 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: ECE279A or equivalent.

ECE281A Topics in Operations Research (3). Topic(s) selected by students and instructor. Examples: network and flows, modeling and simulation, stochastic processes. Prerequisites: ECE181A-B (Math 171A-B) or Management 201B.

ECE281B Optimization Methods: Theory and Applications (3).

Advanced topics in linear, nonlinear, and dynamic programming and their extensions. Prerequisites: ECE181A-B (Math 171A-B) or Management 201B.

ECE281D Operations Management (4) S. Evaluation of risks. Operating decisions in materials handling, inventory control, service systems, scheduling, and facilities design. Discussion of qualitative and quantitative aspects. Same as Management 218.

ECE287A Random Signals and Systems (3) F. Extensions of probability theory to families of random variables indexed on time. General properties of stochastic processes such as stationarity, ergodicity, stochastic continuity, differentiability, and integrability. Linear and nonlinear transformations, correlation, power spectrum, and linear filtering of stochastic processes. Linear mean-square estimation, the orthogonality principle, Wiener Kolmogoroff theory, filtering, and prediction. Wide-sense Markoff sequence, recursive filtering, and the Kalman filter. Prerequisite: ECE186.

ECE287B Theoretical Foundations of Stochastic Processes (3). Mathematical treatment of several advanced topics in stochastic process theory with application to modeling and analyzing communication and control systems. Enough mathematical machinery developed so that the impact and limitations of the theory can be stated precisely and understood for applications. Prerequisite: ECE287A.

ECE294 Electrical Engineering Colloquium (varies) F, W, S. Guest speakers discuss their latest research results in electrical engineering. Prerequisite: consent of instructor. May be repeated for credit.

ECE295 Seminars in Engineering (varies) F, W, S. Scheduled each year by individual faculty in major field of interest. Prerequisite: consent of instructor. May be repeated for credit.

ECE296 Master of Science Thesis Research (varies) 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.

ECE297 Doctor of Philosophy Dissertation Research (varies) 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.

ECE299 Individual Research (varies) F, W, S. Individual research or investigation under the direction of an individual faculty member. Prerequisite: consent of instructor.

Department of Mechanical and Aerospace Engineering

616 Engineering; (714) 856-5406

William E. Schmitendorf, **Department Chair**

Faculty

Paul D. Arthur: Fluid mechanics, design, heat transfer, biomedical engineering

James E. Bobrow: Dynamics, control systems, robotics and automation

Derek Dunn-Rankin: Combustion in two-phase flows; optical methods for two-phase flow diagnostics

James C. Earthman: Fracture, fatigue behavior and cyclic damage, defect monitoring techniques, deformation and damage at elevated temperatures

Donald K. Edwards: Heat and mass transfer, radiation with convection, natural convection, evaporation, condensation

Said E. Elghobashi: Combustion, heat transfer, turbulence, modeling

Carl A. Friehe: Fluid mechanics, turbulence, atmospheric processes

Faryar Jabbari: Control of flexible systems, adaptive identification

John C. LaRue: Fluid mechanics, heat transfer, turbulence, combustion, instrumentation, and micrometeorology

Enrique J. Lavernia: Rapid solidification of metals and alloys; powder metallurgy; metal matrix composites; mechanical behavior of materials; mathematical modeling

J. Michael McCarthy: Robotics, design and analysis of machines and mechanisms

Martha L. McCartney: Microstructure of materials

Farghalli A. Mohamed: Mechanical behavior of materials, creep, superplasticity, strengthening mechanisms

Lawrence J. Muzio: Thermodynamics, heat transfer, combustion
 Dimitri Papamoschou: Compressible shear flows
 Roger H. Rangel: Heat transfer, fluid mechanics, combustion, two-phase flows
 Gary Scott Samuelsen: Combustion processes, sprays, laser diagnostics, and air resources
 William E. Schmitendorf: Control theory and applications
 William A. Sirignano: Combustion theory, fluid mechanics, applied mathematics
 Jeffrey B. Wolfenstine: Mechanical and kinetic properties of materials, creep, superplasticity, ceramics, composite materials

Lecturers

Donald J. Barrus: Computer-aided design, computer-aided manufacturing
 Roger D. Brum: Digital interfacing and optical diagnostics
 David J. Dimas: Computer-aided engineering, experimental modal analysis, numerical methods

Mechanical engineers design, manufacture, and control machines ranging from robots to aircraft and spacecraft, as well as the engines and power plants that drive these machines. 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, and controls. 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, Combustion/Propulsion, Heat Transfer/Fluid Mechanics, Materials Science and Engineering, and Mechanical Systems. Independent research opportunities allow students to pursue other avenues for focusing their studies. Areas of graduate study and research are the thermal and fluid sciences, combustion and propulsion, mechanical systems and robotics, materials science and engineering, and aerospace engineering. Application areas in mechanical engineering include combustion, heat engines, refrigeration, and robotics. Application areas in aerospace engineering include propulsion, aerodynamic design, controls and performance, light weight materials, and terrestrial and aerospace vehicles.

Since mechanical engineering covers a wide spectrum of subjects, many students use the undergraduate curriculum as preparation for further studies in areas such as environmental engineering, medicine, law, and management.

Undergraduate Major in Mechanical Engineering

The undergraduate mechanical engineering curriculum includes a core of mathematics, physics, and chemistry. Engineering courses in fundamental areas fill much of the remaining curriculum; a few electives allow the undergraduate student to specialize somewhat or to pursue broader areas.

Admissions

High School Students: See page 295.

Transfer Students seeking admission to the Mechanical Engineering major are expected to have completed one year of calculus, one year of engineering physics (with laboratory), one year of chemistry (with laboratory), one year of English composition, and a course in computational methods prior to transferring to UCI. Students should work closely with the academic counselors, or contact the UCI Transfer Student Services Office, to ensure that they are enrolled in the appropriate courses

Requirements for the Bachelor's Degree in Mechanical Engineering

Credit for at least 192 units including:

University Requirements: See pages 50-53.

School Requirements: See page 297.

Departmental Requirements:

Mathematics Courses: Mathematics 2A-B-C-D, 3A, and 3D (24 units).

Basic Science Courses: Chemistry 1A-B-C and 1LAE-LBE and Physics 5A-B-C and 5LB-LC (28 units).

Basic Engineering Courses: Engineering E10, E30, E80, ECE72, ME52, ME54, and ME91 (25 units).

Mechanical Engineering Core Courses: Engineering CE150, ME105, ME106, ME107, ME115 or ME117, ME120, ME130A, ME130B, ME147, ME151A-B-C, ME151PA-PB-PC, ME156, and ME170A (55 units).

Technical Electives: 18 units; students may select, with the approval of their faculty advisor, an area of specialization and complete the associated requirements, as shown below.

In addition, students must aggregate a minimum of 34 design units, at least 10 of which must be obtained in the courses approved as technical electives. 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.

Specialization in Aerospace Engineering: Completion of a Senior Design Project in this area and Engineering ME112, ME135, and ME158.

Specialization in Combustion/Propulsion: Completion of a Senior Design Project in this area and three courses selected from Engineering ME110, ME112, ME164, ME180, and ME185.

Specialization in Heat Transfer/Fluid Mechanics: Completion of a Senior Design Project in this area and three courses selected from Engineering ME121, ME135, ME180, and ME185.

Specialization in Materials Science and Engineering: Completion of a Senior Design Project in this area, Engineering ME117, and nine units selected from Engineering ME153, ME155, ME157, and ME199 (up to 3 units).

Specialization in Mechanical Systems: Completion of a Senior Design Project in this area and three courses selected from Engineering ME170B, ME170C, ME180, and ME185.

Free Electives: Additional courses to meet the unit requirement for graduation (6 units).

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 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 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 Undergraduate Student Affairs Office and with their faculty advisors.

Sample Program of Study — Mechanical Engineering

	Freshman	Sophomore	Junior	Senior
Fall	Mathematics 2A Chemistry 1A, 1LAE ME52 Breadth	Mathematics 2D Physics 5C, 5LC E10 Breadth	CE150 ME105 ME115 or ME117 Breadth	ME147 ME151A ME151PA Technical Elective ¹ Technical Elective ¹
Winter	Mathematics 2B Physics 5A Chemistry 1B, 1LBE Breadth	Mathematics 3A E30 ME54 Breadth	ME106 ME130A ME170 Breadth	ME151B ME151PB Technical Elective ¹ Technical Elective ¹ Breadth
Spring	Mathematics 2C Physics 5B, 5LB Chemistry 1C Breadth	Mathematics 3D ECE72 E80 ME91	ME107 ME120 ME130B ME156	ME151C ME151PC Free Elective Technical Elective ¹ Breadth

Students *must* obtain approval for their program of study and must see their faculty advisor at least once each year.

¹ All technical elective courses must be approved by the faculty advisor and must contain at least 10 design credits.

Graduate Study in Mechanical and Aerospace Engineering

The Mechanical and Aerospace Engineering faculty have special interest and expertise in four thrust areas: materials science and engineering, mechanical systems, fluid and thermal sciences, and combustion and propulsion. Graduate study and research in materials includes investigations of materials processing, composite materials, creep, fracture and fatigue, ceramics, and superplasticity. Mechanical systems faculty are studying robust control, parameter identification for flexible space structures, computer-aided design, and robotics—including mechanical design, robot navigation, and coordination of multiple robot systems. Thermal and fluid sciences encompasses natural convection and radiation heat transfer, turbulent transfer, atmospheric processes, and supersonic shear flows. Combustion and propulsion research efforts include studies of the processes of fuel-air mixing, turbulent transport, liquid sprays, and the formation of gaseous and solid pollutants in gas, liquid, and coal-fueled combustion systems, including gas turbines, boilers, incinerators, and rockets.

Aerospace engineering research efforts combine specialties from each of the four thrust areas as well as study in propulsion, aerodynamics, performance and stability, space structures, and lightweight materials and structures.

Programs of study leading to the M.S. and Ph.D. degrees in Engineering are offered.

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.

Plan I: Thesis Option

The thesis option requires completion of 36 units of study; the completion of an original research project, 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. To complete the required 36 units, students must take: ME200A and ME200B; 12 units of graduate courses numbered ME201-289 approved by the faculty advisor; and 16 units from unrestricted courses of which not more than eight units are in ME296 and not more than five units are in courses numbered ME291-299.

Plan II: Comprehensive Examination Option

The comprehensive examination option requires completion of 36 units of study, execution and documentation of a design project (which can count for up to three of the 36 required units), and completion of an examination on the course work and project. This plan is available for those who wish to emphasize professional practice.

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 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 Department.

There are no specific course requirements, but there are several milestones to be passed: admission to the Ph.D. program by the faculty; within one year of arrival on the campus, passage of a preliminary examination or similar assessment of the student's background and potential for success in the doctoral program; meeting departmental teaching requirements, which can be satisfied through service as a teaching assistant or equivalent; research preparation; formal advancement to candidacy through 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. 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. Doctoral programs must be completed in seven calendar years from the date of admission.

Before seeking admission, a Ph.D. applicant should communicate directly and in some detail with a prospective faculty sponsor. 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 will ordinarily support only one year of 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 director, will be employed as a research assistant through the faculty member's research grants, and will use laboratory supplies, equipment, and computer facilities purchased through these extramural funds.

Combustion and Propulsion Science and Technology

The Irvine Research Unit in Combustion and Propulsion Science and Technology is a multidisciplinary activity addressing both fundamental and applied research in combustion and propulsion. The activity encompasses faculty, students, and staff in the Department of Mechanical and Aerospace Engineering, the Department of Chemistry, and the College of Medicine. The IRU promotes and expands this interaction, provides a broader portfolio of research experiences and opportunities to graduate and undergraduate students, sponsors a seminar series and workshops, and supports a visitors program to enhance interaction with distinguished scientists from both industry and academia.

The focus of the IRU is directed to laser diagnostics (velocity, temperature, species concentration, droplet size, droplet velocity, and soot particulate), advanced numerical methods (direct simulation; mass, heat and momentum transport; spray processes), and applications (turbulent transport, spray combustion, chemical kinetics, chemistry-turbulence interaction, and health effects).

Further information is available from Professor G. S. Samuelsen, Director of the Irvine Research Unit in Combustion and Propulsion Science and Technology, University of California, Irvine, CA 92717; telephone (714) 856-5468.

Courses in Mechanical and Aerospace Engineering

Lower-Division

NOTE: With the exception of ME182 and ME183, the undergraduate courses listed below are open only to students in the School of Engineering. All other majors must petition for permission to enroll.

ME52 Computer-Aided Design (4) F. Develops skills for interpretation and presentation of mechanical design drawings. An integrated approach to drafting based on sketching, manual drawing board work, and three-dimensional computer-based CAD techniques is used to develop a modern outlook on mechanical design problems. (Design units: 0)

ME54 Principles of Materials Science (4) W. Atomic structure, bonding, imperfections, deformation, diffusion, physical and mechanical properties, phase transformation, strengthening processes, and heat treatment. Prerequisites: Physics 5A-B-C, Chemistry 1A-B-C. (Design units: 0)

ME57 Manufacturing Processes in Engineering (2) F, W, S. 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)

ME91 Introduction to Thermodynamics (4) S, Summer. Thermodynamic principles; open and closed systems representative of engineering problems. Prerequisites: Physics 5B, Mathematics 2D. Formerly ME101. (Design units: 0)

Upper-Division

ME105 Materials Engineering Laboratory (4) F. Introduction to the experimental techniques used to characterize the properties of engineering materials. Emphasis on understanding the influence of microstructure on elastic, plastic, and fracture behavior. Topics include metallography, strengthening mechanisms, creep, impact loading, fatigue, and microstructural design. Prerequisite: ME54. Formerly ME105A. (Design units: 2)

ME106 Mechanical Systems Laboratory (4) W. 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. Prerequisite: Engineering 80. Formerly ME105B. (Design units: 2)

ME107 Fluid Thermal Science Laboratory (4) S. Fluid and thermal engineering laboratory. Experimental methods and experimental and numerical analysis of fluid flow, heat transfer, and thermodynamic systems. Report writing stressed. Prerequisites: ME91, ME115. Formerly ME105C. (Design units: 0)

ME110 Combustion in Practical Systems (4) F. Combustion and design of gaseous, liquid, and coal-fired combustion systems. Fuels, fuel injection, combustion aerodynamics, and fuel-air mixing. Operating and design aspects of practical systems including engines, boilers, furnaces, and incinerators. Prerequisite: ME115. (Design units: 3)

ME112 Propulsion (4) S. Application of thermodynamics and fluid mechanics to basic flame processes and cycle performance in propulsion systems: gas turbines, ramjets, scramjets, and rockets. Prerequisite: ME115. (Design units: 2)

ME115 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: ME91. (Design units: 0)

ME116 Statistical Thermodynamics (3) W. Classical and quantum mechanical descriptions of substances and thermodynamic properties of gases, liquids, and solids. Elementary kinetic theory of gases and evaluation of transport coefficients. Prerequisite: Physics 5E. (Design units: 0)

ME117 Thermodynamics of Solids (3) F. Emphasizes the principles and applications of thermodynamic principles in materials. Topics include: heat of formation, heat capacities of crystals, first-order reactions, second-order reactions, ideal solutions, regular solutions, and thermodynamics of surfaces and interfaces. Prerequisite: ME54. (Design units: 0)

ME120 Heat Transfer (4) S. Fundamentals of heat transfer with application to practical problems. Conduction, convection in laminar and turbulent flow, radiation heat transfer, and combined heat transfer. Application to insulation requirements and heat exchangers. Individual design project. Prerequisites: ME91, ME130A. (Design units: 0)

ME121 Topics in Thermal Design (4) W. Topics in design selected from mechanical engineering. Heat exchangers, heat barriers, heat pipes, solar collectors, thermal environmental controls, and thermal storage systems. Thermoeconomic optima. Effect of geometry on volume, weight, capacity, and pumping power. Prerequisite: ME120. (Design units: 3)

ME130A Introduction to Fluid Mechanics (4) W. Hydrostatics; control volume analysis; the basic flow equations of conservation of mass, momentum, and energy; dimensional analysis, effects of viscosity; mathematical analysis of ideal fluid flow. Prerequisites: Physics 5A, Mathematics 2D, and Engineering E80. (Design units: 0)

ME130B Introduction to Viscous and Compressible Flows (3) S. Introduction to the analysis of viscous, incompressible, and one-dimensional compressible flows. Prerequisites: ME91, ME130A. (Design units: 1)

ME135 Compressible Flow (3) W. Compressible effects in fluid mechanics. Isentropic inviscid flow. Channel, Fanno, Rayleigh flows. Acoustics, shock waves, linearized supersonic flow, nozzles and diffusers. Prerequisite: ME130A. (Design units: 1)

ME146 Orbital Mechanics (3) S. Celestial mechanics as applied to space vehicle orbits. Atmospheric entry. Prerequisite: Engineering E80. (Design units: 0)

ME147 Vibrations (4) F. 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. Corequisite: Engineering CE150. Prerequisites: Engineering E30, E80. (Design units: 2)

ME151A-B-C Mechanical Engineering Design (3-3-2) F, W, S. Kinematic analysis of mechanisms and linkage synthesis. Design of machine elements such as shafts, gears, bearings, springs. Major design project conducted, utilizing all phases of mechanical design methodology: conceptual design, synthesis, analysis, and review. Corequisite: ME151PA-PB-PC. Prerequisites: ME91, ME130A, and ME156. (Design units: 3-3-2)

ME151PA-PB-PC Senior Design Project (1-1-1) F, W, S. Project to accompany ME151A-B-C. Corequisite: ME151A-B-C. (Design units: 1-1-1)

ME152A Introduction to Computer-Aided Engineering (3) F. 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: ME156, ME120. (Design units: 1)

ME152B Application of Computer-Aided Engineering in Design (3) W. A variety of engineering problems are designed with modern computer-aided engineering hardware and software. Prerequisite: ME152A. (Design units: 2)

ME153 Design Failure Investigation (4) S. 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. Prerequisites: ME151A, ME156. (Design units: 2)

ME155 Composite Materials Design (4) W. 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: ME54, CE150. (Design units: 3)

ME156 Mechanical Behavior and Materials Processing (4) S. Mechanical deformation, including elasticity, plasticity, yielding, creep, fatigue and fracture, and various design criteria. Trade-offs in material selection to meet design goals are emphasized. Use of library is stressed. Prerequisites: ME54, CE150. (Design units: 2)

ME157 Failure Mechanisms in Engineering Materials (4) S. The principles and practical guidelines of identifying and treating the mechanisms that cause mechanical failure of engineering materials. Defect detection methods, fracture mechanics, the brittle failure modes, stress-corrosion cracking, fatigue crack growth, and high-temperature fracture. Prerequisite: ME54, ME156, or consent of instructor. (Design units: 2)

ME158 Aeronautical Design (4) F. Concepts of mechanical design applied to aircraft, sizing, configuration, and aerodynamic analyses as related to performance verification, wing thickness and sweep, wing loading, payload, and takeoff field length. Each student conducts preliminary design and performance analysis of a complete airplane. Prerequisites: Engineering E30, E80, ME130A. (Design Units: 4)

ME162 Engineering Meteorology (3) S. Fundamentals and aspects of meteorology important to engineering, environmental, and aviation problems. Basic physics of weather, dispersion of pollutants, wind loading. A design problem is included. Prerequisite: ME130A. (Design units: 1)

ME164 Air Pollution and Control (4) S. 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. Prerequisite: ME91. (Design units: 2)

ME170 Introduction to Control Systems (4) W. With laboratory. Feedback control systems. Modeling, stability, and systems specifications. Root locus, Nyquist, and Bode methods of analysis and design. Prerequisites: Engineering E80, Mathematics 3D. Formerly ME170A. (Design units: 1)

ME171 Digital Control Systems (4) W. Methods for analysis and design of discrete-time control systems. Applications of the sampling theorem, z-transforms, difference equations, discrete Fourier transforms. State-space techniques of digital control system design, z-plane stability, frequency response. Prerequisite: ME170. Formerly ME170B. (Design units: 2)

ME172 Analysis and Design of Control Systems (4) S. System modeling, simulation, analysis, design, and experimental verification of control system operation. Case studies include experiments in hydraulic and pneumatic position control, liquid leveling, force, temperature, and fluid flow control. Prerequisites: ME170, ME180. Formerly ME170C. (Design units: 3)

ME180 Instrumentation and Data Acquisition (4) W. The use of semiconductor devices, digital and linear circuits in the design of interfaces to mechanical engineering systems. Emphasis on design and use of microprocessor interfacing for control and data acquisition. Prerequisite: ME106. (Design units: 3)

ME182 Geometric Modeling I (4) F. Basic geometry, linear algebra, and calculus techniques are used to understand modern advanced computer graphics. Enables students to display, manipulate, and animate different objects on a computer screen. Topics include introduction to lighting and shading, hidden line removal. Prerequisite: Mathematics 3A. (Design units: 2)

ME183 Computer-Aided Mechanism Design (4) W. Focuses on the design of planar, spherical, and spatial mechanisms using modern computer workstations. Topics include both exact and approximate, graphical and analytical design techniques. Students are required to use the existing software (or develop new algorithms) to design and build various mechanisms for new applications. Prerequisite: Mathematics 3A. (Design units: 4)

ME185 Numerical Analysis in Mechanical Engineering (4) W. 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: Engineering E10, Mathematics 3A and 3D. (Design units: 2)

ME198 Group Study (4) F, W, S. Group study of selected topics in engineering. Prerequisite: consent of instructor. May be repeated for credit. (Design units: varies)

ME199 Individual Study (2 to 4) F, W, S. For undergraduate Engineering majors in supervised but independent reading, research, or design. Prerequisite: consent of instructor. May be repeated for credit.

MEH199 Individual Study for Honors Students (1 to 5 per quarter) F, W, S. Independent reading, research, or design under the direction of a faculty member or group of faculty members in Mechanical Engineering. Prerequisite: restricted to members of the Campuswide Honors Program who are Mechanical Engineering students. May be repeated for credit. (Design units: varies)

Graduate

ME200A Engineering Analysis I (4). Vector spaces, norms and convergence. Linear operators, and matrix representations of finite dimensional operators. Eigenvalues and eigenvectors. Solution of linear ODEs through the evolution equation. Stability of nonlinear ODEs by eigenvalue analysis, limit cycles. Prerequisite: Mathematics 3D.

ME200B Engineering Analysis II (4) W. Ordinary and partial differential equations (vibrating string, beam, and heat equations). Separations of variables, boundary value problems, and eigenfunction expansion. Fourier series, Fourier and Laplace transforms. Prerequisite: Mathematics 3D.

ME201A Computer Aided Geometric Modeling (3) W. Boundary representation of solids using polyhedral models, topology representation and boundary evaluation. Visualization techniques. Parametric models for space curves. Prerequisite: ME200A.

ME201B Advanced Geometric Modeling (3) S. Analytical models for shape representation. Shape analysis and shape interrogation. Computational models. Prerequisite: ME201A.

ME202 Differential Geometry (3) W. Advanced calculus with applications to the analysis of curves and surfaces in higher dimensions. Topics include: the properties of real numbers, linear spaces, multilinear algebra, quadratic forms, and the curvature of surfaces.

ME205 Perturbation Methods in Engineering (3) W. Asymptotic expansions of integrals. Regular and singular perturbations. Perturbation methods for ordinary and partial differential equations. Matched asymptotic expansions.

ME210 Advanced Fundamentals of Combustion (3) W. 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 spray combustion. Prerequisite: ME110.

ME215 Advanced Combustion Technology (3) 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. Prerequisite: ME110.

ME216 Advanced Thermodynamics (3) F of even years. 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: ME101 and ME200A.

ME217 Generalized Thermodynamics (3) F. 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: ME101, ME115 or equivalent.

ME220 Conduction Heat Transfer (3) W. Analytical and numerical methods for the determination of steady state and transient conduction of heat in solids with and without heat sources and phase change. Classical and approximate solutions with applications to various geometric configurations. Prerequisite: ME120.

ME221A Convective Heat Transfer I (3) S. Laminar convective heat transfer in external and internal flows. Similarity solutions. Integral and expansion methods. Introduction to finite difference methods.

ME221B Convective Heat Transfer II (3) F of even years. Turbulent convective heat transfer in external and internal flows. Free convection from external surfaces. Finite difference applications. Prerequisite: ME221A.

ME222 Radiation Heat Transfer (3) F. Black body radiation. Radiative transport equations for surfaces separated by nonparticipating media. Radiant energy transfer through absorbing, emitting, and scattering media. Radiation-conduction interaction. Radiation-convection interaction. Introduction to numerical methods in radiation. Prerequisite: ME120.

ME223A Numerical Methods in Heat, Mass, and Momentum Transport (Laminar Flows) (3) W. 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. Prerequisite or corequisite: ME230A.

ME223B Numerical Methods in Heat, Mass, and Momentum Transport (Turbulent Flows) (3) S. 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: ME223A.

ME224 Convective Mass Transfer (3) F of odd years. 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: ME120.

ME225 Multiphase Flow and Heat Transfer (3) F of odd years. Formulation and solution of the equations of multiphase flow and heat transfer. Boiling heat transfer, nucleation, bubble dynamics, film and pool boiling; condensation; flow patterns in two-phase pipe flows; bubbly, plug, and annular flows. Prerequisites: ME120, ME221A.

ME226 Special Topics in Heat and Mass Transfer (3) F of even years. Selected topics of current interest in heat transfer. Topics include conductive, convective, radiative, and coupled heat and mass transfer; multicomponent systems; and phase change. Prerequisites: ME120, ME221A. May be repeated for credit as topic varies.

ME230A Advanced Incompressible Fluid Dynamics I (3) F. Vector and tensor notation. Stokes relation between stress and strain, and development of Navier-Stokes equations. Exact solution to one- and two-dimensional, steady and unsteady laminar flows. Lubrication theory and creeping flows. Laminar boundary layers and integral methods of solution. Prerequisite: ME130B

ME230B Advanced Incompressible Fluid Dynamics II (3) W. The course covers waves and potential flow. The course is intended to be an extension of 230A, but students with a strong background in fluid dynamics may be allowed to take it, subject to the instructor's approval.

ME231 Fundamentals of Turbulence (3) S of even years. 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: ME230A.

ME232 Atmospheric Turbulence (3) S of odd years. Turbulent motion. Statistical and spectral methods. Homogeneous and shear flow problems. Turbulence in the atmosphere. Boundary layer, effects of buoyancy, rotation. Prerequisite: ME230A.

ME235 Advanced Compressible Fluid Dynamics (3) S. Current and advanced concepts in compressible flows. Methods of characteristics. Slender body theory. Transonic, supersonic, hypersonic similarity rules. Laminar and turbulent compressible shear flows. Prerequisites: ME120, ME130A or equivalent.

ME236 Nonequilibrium Gas Dynamics (4) W. Relates phenomena on the atomic and molecular scale to continuum flow behavior. The real gas effects in high-temperature flows is emphasized. Prerequisite: ME130A.

ME240 Kinematics and Robotics (3) S. 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.

ME247 Advanced Dynamics (3) F. Kinematics and dynamics of three-dimensional motions. Lagrange's equations, Newton-Euler equations. Applications include robot systems and spinning satellites. Prerequisite: ME147 or equivalent.

ME251A Dislocation Theory (3) F. 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: ME54 or consent of instructor.

ME252A Theory of Diffusion (3) W. Solid-state diffusion, analysis of diffusion in solids, thermodynamics of diffusion, application of diffusion theory to phase transformation and deformation problems. Prerequisite: ME54 or consent of instructor.

ME252B Phase Transformations (3) W. Kinetics of nucleation, nucleation theory, isothermal transformation, martensitic transformation. Prerequisite: ME252A.

ME253 Kinetic Phenomena in Materials (3) S. Kinetic phenomena materials from a phenomenological viewpoint. Diffusion, chemical kinetics, particle-fluid interactions, adsorption, evaporation, statistical thermodynamics, kinetics of phase transformations, and spinodal decomposition.

ME254A Mechanical Behavior of Engineering Materials (3) S. Principles governing structure and mechanical behavior of materials, relationship relating microstructure and mechanical response with application to elasticity, plasticity, creep, and fatigue, study of rate-controlling mechanisms and failure modes, fracture of materials. Prerequisite: ME54.

ME254B Plasticity and Metal Forming (3) S. Stress and strain analysis, plasticity equations, yielding, integration of plasticity equations, plastic instability, application of plasticity theory to some forming processes. Prerequisites: Engineering E30, ME54, or consent of instructor.

ME255A Design with Ceramic Materials (3) S. 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: ME54.

ME255B Science of Composite Materials (3) S. Properties of intentionally inhomogeneous materials, especially composites manufactured for extreme environments, elevated temperatures, wear resistance. Chemical compatibility of constituents, microstructural stability, environmental effects. Micromechanics of particulate and fiber-reinforced composites. Strength criteria, toughness, and failure mechanisms. Thermomechanical effects. Prerequisites: ME54 and CE150A or consent of instructor.

ME256A Fracture of Engineering Materials (3) W. 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: ME156 or ME254A or consent of instructor.

ME256B Fatigue of Engineering Materials (3) W. Fatigue deformation and damage in engineering materials. Phenomenological descriptions, the Bauschinger Effect, persistent slip bands, extrusions and intrusions, crack nucleation, stage I and II crack growth, threshold effects, crack growth laws, materials selection. Prerequisite: ME256A or ME156 or equivalent.

ME257A Rapid Solidification (3) W. Principles and applications of rapid solidification, processing, heat flow, microstructures, and properties. Metastable phase formation, fine-grained structures, and extended solid solubility of alloying elements.

ME257B Solidification Processing (3) F. Principles of control of structure, properties, and shape in processes involving liquid-solid and vapor-solid transformations. Heat flow, solute redistribution, nucleation and growth kinetics; resultant structure and properties. Examples drawn from metal casting and rapid solidification.

ME257C Recent Developments in Advanced Materials (3) S. Concepts underlying the evolution of the microstructure and the mechanical behavior of advanced metallic systems during processing; correlation between microstructures and mechanical behavior. Emphasis on current research areas in materials.

ME258 Computer Techniques in Experimental Materials Research (3) F. Principles and practical guidelines of automated materials testing. Computer fundamentals, programming languages, data acquisition and control hardware, interfacing techniques, programming strategies, data analysis, data storage, safeguard procedures. Prerequisite: ME54 or consent of instructor.

ME259A Theory of Electron Microscopy (3) W. Imaging and diffraction theory relevant to transmission electron microscopy. The interpretation of images and diffraction information for microstructural analysis and the acquisition of microanalytical/chemical information. Appropriate for graduate students of all disciplines dealing with materials (i.e., engineering, physics, chemistry, and geosciences).

ME259B Applied Analytical Transmission Electron Microscopy (3) S. Lectures on advanced topics in analytical transmission electron microscopy (TEM) along with a weekly laboratory. Students develop skill with the operation of the TEM and learn advanced research techniques. Prerequisite: ME259A.

ME260 Microcharacterization of Materials (3) F. Basic physical principles and applications of many modern microanalytical techniques available for characterizing materials. Advantages, limitations, and instrumentation in each method are discussed. Techniques include: quantitative x-ray microanalysis, Auger electron spectroscopy, and electron energy-loss spectroscopy.

ME261 High-Temperature Deformation of Engineering Materials (3) F. 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: ME54 and ME156 or consent of instructor.

ME264 Combustion Particulates and Aerosols (3) S. Behavior of airborne solid and liquid particles in air resources engineering. Description of air drag, gravity, Brownian motion, light scattering, charging phenomena, coagulation, size distributions. Applications include generation and classification of aerosols, lung deposition, formation and characteristics of atmospheric aerosols. Prerequisites: ME130A-B.

ME270A Linear Systems (3) F. Methods of linear systems analysis. State-space representations of continuous-time linear systems-impulse response and state transition operators. Controllability and observability. Prerequisite: ME170A or ECE140A.

ME270B Linear Systems II (3) W. 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: ME270A.

ME271 System Identification (3) S. 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: ME270A.

ME272 Robust Control Theory (3) S. Methods for control design of systems with uncertainty. Guaranteed stability and tracking problems. Linear controls via scalar search technique and Riccati equation method. Nonlinear control design via Lyapunov theory. Kharitonov's theorem extensions for determining robustness. Simultaneous stabilization problems. Prerequisite: ME270A.

ME273 Control of Robot Systems (3) F. 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. Prerequisite: ME247, ME270A.

ME280 Digital Data Acquisition and Analysis (3) S. Principles of digital acquisition of the various types of signals encountered in engineering practice and research and their statistical and spectral analysis. Topics covered include: analog-to-digital conversion, aliasing, recording, and statistical and spectral analysis to be done on a computer as a part of the course. Prerequisites: ME180, ME200A-B-C.

ME294 M.S. Project (3) F, W, S. Tutorial in which masters-level students taking the comprehensive examination option undertake a masters-level research project.

ME295 Seminars in Engineering (varies) F, W, S. Seminars by individual faculty in major fields of interest. Prerequisite: consent of instructor.

ME296 Master of Science Thesis Research (varies) 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.

ME297 Doctor of Philosophy Dissertation Research (varies) 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.

ME298 Seminars in Mechanical 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 Only.

ME299 Individual Research (varies) F, W, S. Individual research or investigation under the direction of an individual faculty member. Prerequisite: consent of instructor.

Graduate School of Management

Dennis J. Aigner, **Dean**

220 Graduate School of Management

Graduate and Undergraduate Counseling: (714) 856-5232

Faculty

Dennis J. Aigner, Ph.D. University of California, Berkeley, *Dean of the Graduate School of Management and Professor of Management* (applied econometrics, statistics, operations research)

Yannis Bakos, Ph.D. Massachusetts Institute of Technology, *Assistant Professor of Management* (information system architectures, competitive information systems, information technology and industrial organization)

Richard A. Brahm, Ph.D. University of Pennsylvania, The Wharton School, *Assistant Professor of Management* (diversification strategy and structure, joint ventures, merger and acquisition strategy, industrial policy and global strategy)

George W. Brown, Ph.D. Princeton University, *Professor Emeritus of Management* (mathematical statistics, game theory, dynamic decision processes, operations research, computer design, operation, applications, information networks)

Nai-Fu Chen, Ph.D. University of California, Berkeley; Ph.D. University of California, Los Angeles, *Professor of Management* (financial investments, relation between real economy and financial markets, contingent claims)

Robert A. Connolly, Ph.D. University of Maryland, *Assistant Professor of Management* (applied Bayesian methods in financial economics, financial market anomalies, asset return volatility, international finance, applied econometrics)

Charles J. Cuny, Ph.D. Stanford University, *Assistant Professor of Management* (market microstructure, futures markets)

Imran S. Currim, Ph.D. Stanford University, *Associate Professor of Management* (marketing management, modeling, research, strategy, new products)

Joseph F. DiMento, Ph.D., J.D. University of Michigan, *Director of the Office of Land Management and Professor of Social Ecology 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)

Paul J. Feldstein, Ph.D. University of Chicago, *Professor of Management and FHP Foundation Distinguished Chair in Health Care Management* (economics of health care)

Gordon J. Fielding, Ph.D. University of California, Los Angeles, *Professor of Social Science and Management and Director, Institute of Transportation Studies* (urban theory and transportation policy)

Mary C. Gilly, Ph.D. University of Houston, *Associate Professor of Management* (marketing management, marketing for nonprofit organizations, consumer behavior, services marketing)

John Graham, Ph.D. University of California, Berkeley, *Associate Professor of Management* (international marketing, management and strategy, international business negotiations, managing firms in volatile environments)

Vijay Gurbaxani, Ph.D. University of Rochester, *Assistant Professor of Management* (economics of information systems management, impact of information technology on organization and market structure)

Robert A. Haugen, Ph.D. University of Illinois, *Professor of Management* (impact of agency problems, impact of taxes on security pricing and investment strategy, design and pricing of financial securities)

Joanna L. Ho, Ph.D. University of Texas at Austin, *Assistant Professor of Management* (human information processing systems, behavioral issues in auditing and accounting)

L. Robin Keller, Ph.D. University of California, Los Angeles, *Associate Professor of Management and Social Sciences* (decision analysis, risk analysis, problem structuring, management science)

John Leslie King, Ph.D. University of California, Irvine, *Professor of Management and of Information and Computer Sciences* (computers and public policy, public management uses and impacts of information systems, economics and management of computing)

Rob Kling, Ph.D. Stanford University, *Professor of Information and Computer Science and Management* (social analysis of computing, computer technology and public policy, sociology of computing)

Kenneth L. Kraemer, Ph.D. University of Southern California, *Professor of Management and Director of the Public Policy Research Organization* (public policy, information systems, social and managerial impacts of computing)

Bruce W. Lamar, Ph.D. Massachusetts Institute of Technology, *Assistant Professor of Management* (systems analysis, mathematical programming, transportation and network analysis, probabilistic modeling)

R. Duncan Luce, Ph.D. Massachusetts Institute of Technology, *Director, Irvine Research Unit in Mathematical Behavioral Science, UCI Distinguished Professor of Psychology, and Professor of Management*

Newton Margulies, Ph.D. University of California, Los Angeles, *Professor 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* (managerial economics, strategy, entrepreneurship, organizations and their environments)

Peter Navarro, Ph.D. Harvard University, *Associate Professor of Management* (electric utilities regulation, growth control, industrial policy, public policy)

Jone Pearce, Ph.D. Yale University, *Associate Dean of Instructional Programs and Associate Professor of Management* (organizational behavior, human resources management, cooperation, voluntary associations)

Cornelia Pechmann, Ph.D. Vanderbilt University, *Assistant Professor of Management* (consumer behavior, advertising strategy, health care marketing, evaluation research)

Lyman W. Porter, Ph.D. Yale University, *Special Assistant for Academic Affairs to the Executive Vice Chancellor and Professor of Management* (organizational behavior, management education, personnel management)

Waymond Rodgers, Ph.D. University of Southern California, *Assistant Professor of Management* (financial accounting, commercial lending, human information processing systems, covariance structural modeling)

Judy B. Rosener, Ph.D. Claremont Graduate School, *Senior Lecturer in Management* (business and government, cultural diversity, gender roles and management)

Roland Schinzinger, Ph.D. University of California, Berkeley, *Professor of Electrical Engineering and Management* (electric power systems, operations research, optimal design), Registered Professional Engineer

Carlton H. Scott, Ph.D. The University of New South Wales, *Professor of Management and of Electrical and Computer Engineering* (operations research methodology, production management, total quality management, statistics)

Kut C. So, Ph.D. Stanford University, *Assistant Professor of Management* (design of production and inventory systems, optimization of queueing systems, operations research)

Daniel Stokols, Ph.D. University of North Carolina, *Director of the Program in Social Ecology and Professor of Social Ecology and of Management* (health impacts of environmental stressors, environmental design and social behavior)

Neal M. Stoughton, Ph.D. Stanford University, *Assistant Professor of Management* (mathematical and game theoretic models of corporate finance, futures markets, options markets, economics of information, agency theory)

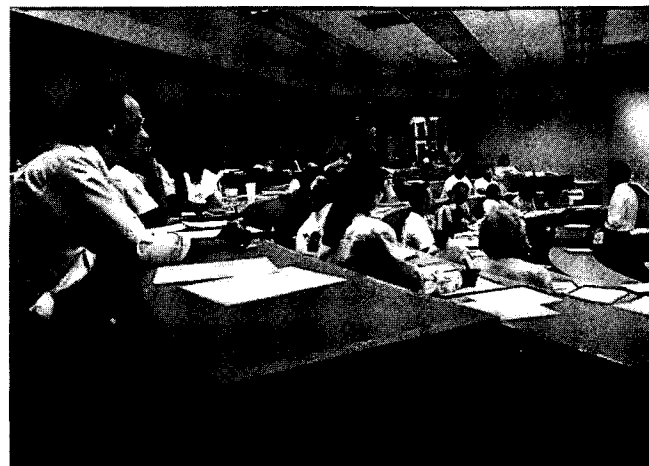
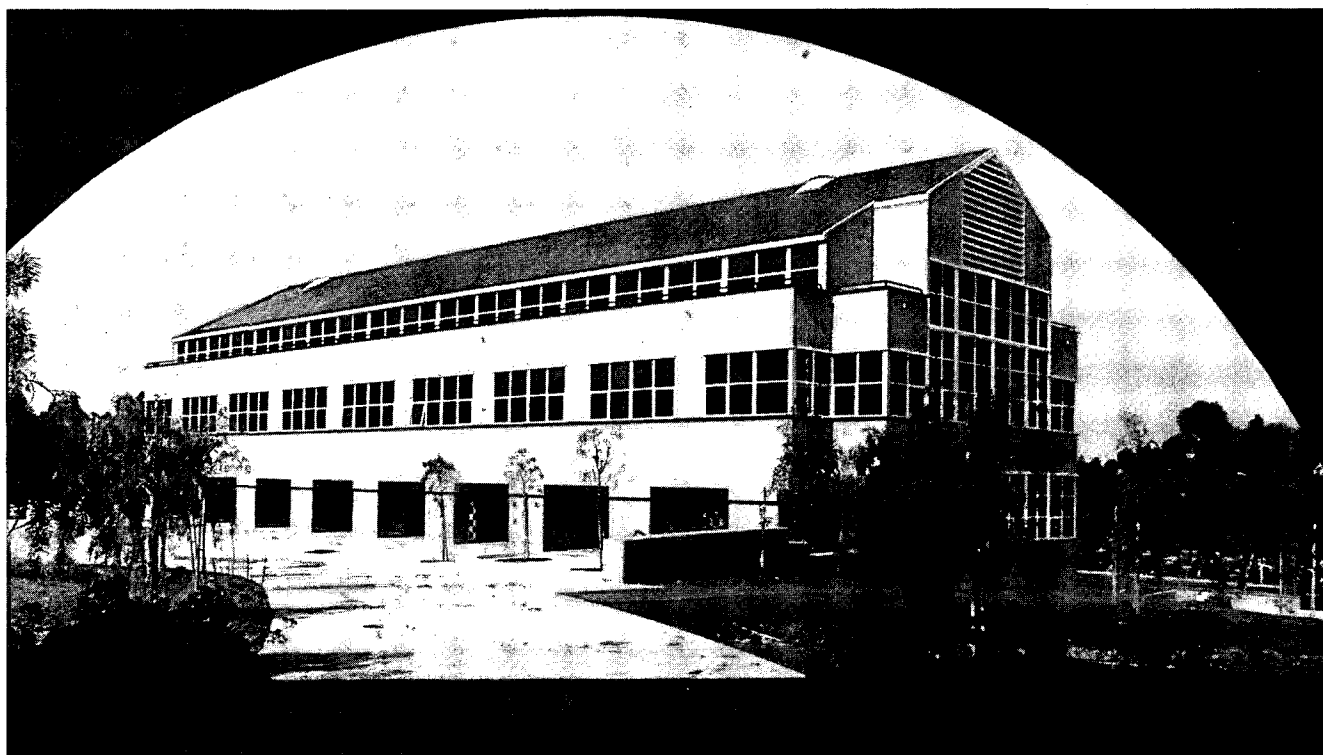
Eli Talmor, Ph.D. University of North Carolina at Chapel Hill, *Associate Professor of Management* (corporate finance, taxation, financial markets)

Anne S. Tsui, Ph.D. University of California, Los Angeles, *Associate Professor of Management* (personnel/human resource management, organizational behavior, managerial effectiveness and leadership skills, performance appraisal, training, and development)

Alladi Venkatesh, Ph.D. Syracuse University, *Associate Professor of Management* (market segmentation, sociology of consumption, marketing theory, and macromarketing)

Nicholas P. Vitalari, Ph.D. University of Minnesota, *Associate Dean for Research and Associate Professor of Management and Information and Computer Science* (systems analysis, decision support systems, sociology of information systems)

Mary T. Washington, Ph.D. University of Southern California, *Assistant Professor of Management* (behavioral decision making, audit judgment processes)



The distinctive Graduate School of Management building houses a variety of special facilities including a 30-station computer laboratory and case study rooms designed to offer a stimulating environment for lectures and discussions.

Margarethe F. Wiersema, Ph.D. University of Michigan, *Assistant Professor of Management* (corporate strategy, corporate entrepreneurship, executive succession)

William F. Wright, Ph.D. University of California, Berkeley, *Associate Professor of Management* (human information processing and auditing/accounting decisions, nature of expert judgments, microcomputer-based decision aids, artificial intelligence/expert systems)

Adjunct Faculty and Lecturers

Robert W. Allen, Ph.D. University of California, Irvine, *Lecturer in Management* (organizational behavior)

Albert J. Ashurst, M.S. University of California, Irvine, *Lecturer in Management* (organizational behavior, organizational theory)

Virginia Bott, Ph.D. The Johns Hopkins University, *Lecturer in Management* (public management/administration)

V. Joseph Bowman, Ph.D. The Johns Hopkins University, *Lecturer in Management* (operations research, management)

Peter E. Bretschger, B.S. Syracuse University, *Lecturer in Management* (advertising)

Daniel J. Cooper, J.D. Western State University College of Law, *Lecturer in Management* (federal taxation, corporate taxation)

George C. Davis, M.S. University of Southern California, *Lecturer in Management* (real estate, land economics)

Frank Ewing-Chow, Ph.D., D.B.A. University of Southern California, *Lecturer in Management* (accounting, financial auditing), Certified Public Accountant

Dvajad Kashefinejad, Ph.D. Claremont Graduate School, *Lecturer in Management* (finance, monetary policy, econometrics)

James Ragan, M.A. University of California, Berkeley, *Lecturer in Management* (bargaining, negotiations, conflict resolution)

Robert Rooney, Ph.D. Stanford University, *Lecturer in Management* (econometrics, forecasting)

Leon M. Schwartz, A.B. The Johns Hopkins University, *Vice Chancellor Administrative and Business Services and Senior Lecturer in Management* (accounting), Certified Public Accountant

Bernard Sisco, B.C.S. Benjamin Franklin University, *Senior Lecturer in Management* (public policy, management in federal sector, planning and analysis)

The Graduate School of Management (GSM) offers an undergraduate minor in Management and graduate study leading to the M.B.A. (Master of Business Administration), and to the Ph.D. degree in Administration. The undergraduate minor 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. The Master's degree is professional in nature; the Ph.D. in Administration is for those who wish to pursue a career in scholarly research.

The Master's program is intended to provide future managers with a firm foundation in the basic disciplines and in management tools and techniques. Each student in the Master's program focuses upon an institutional area and may develop expertise in one or more functional specializations. The Ph.D. program for the field of administration has academic and research objectives.

Educational Objectives

Three basic premises underlie the School's philosophy of graduate education. First, there are significant phenomena and problems common to business, educational, and governmental organizations; second, a common set of disciplines, concepts, techniques, and technologies exist which are appropriate to a wide range of organizational or scholarly roles; third, many administrators in the future will work in more than one of the three arenas during their careers.

Regardless of the content of particular courses, it is expected that all degree candidates will be exposed to and have the ability to use the following:

General Knowledge. The broad context of organizations and management; the late twentieth century (significant trends, conditions, and problems); history of science, scientific inquiry, and the philosophy of science; economic, political, and social analysis.

Conceptual and Empirical Knowledge of Organizations. Basic concepts of management; the structure and functions of organizations, including comparative analysis and interorganizational relations; levels and units of decision making; individual behavior and group norms; operating environments of organizations.

Specific Knowledge of Particular Arenas of Administration. In-depth study of specific institutional environments for administrative practice, such as governmental and business organizations, and other types of organizations.

Mathematics and Statistics. As tools of precise reasoning, as languages which will tend more and more to dominate professional and scholarly literature, and above all, as foundations for relevant quantitative methods.

Technical Bases of Management. Decision processes; operations research; systems and policy analysis; budgeting and accounting techniques; personnel policies; techniques for measuring and affecting attitudes and behavior; research design and strategies.

Management Information Systems. Computer technology, information sciences, and basic computer applications.

General Skills. Political skills, effective management of interpersonal relations, leadership strategies and tactics, and competence in oral, graphic, and written expression.

Professional Orientations. Identification of factors, values, and policies which might bear on successful, responsible, and intellectually honest performance of organizational roles. Recognition of the administrator's potential contributions to society and of ethical and moral problems which arise from social research and the management of human enterprises.

General Admission Requirements

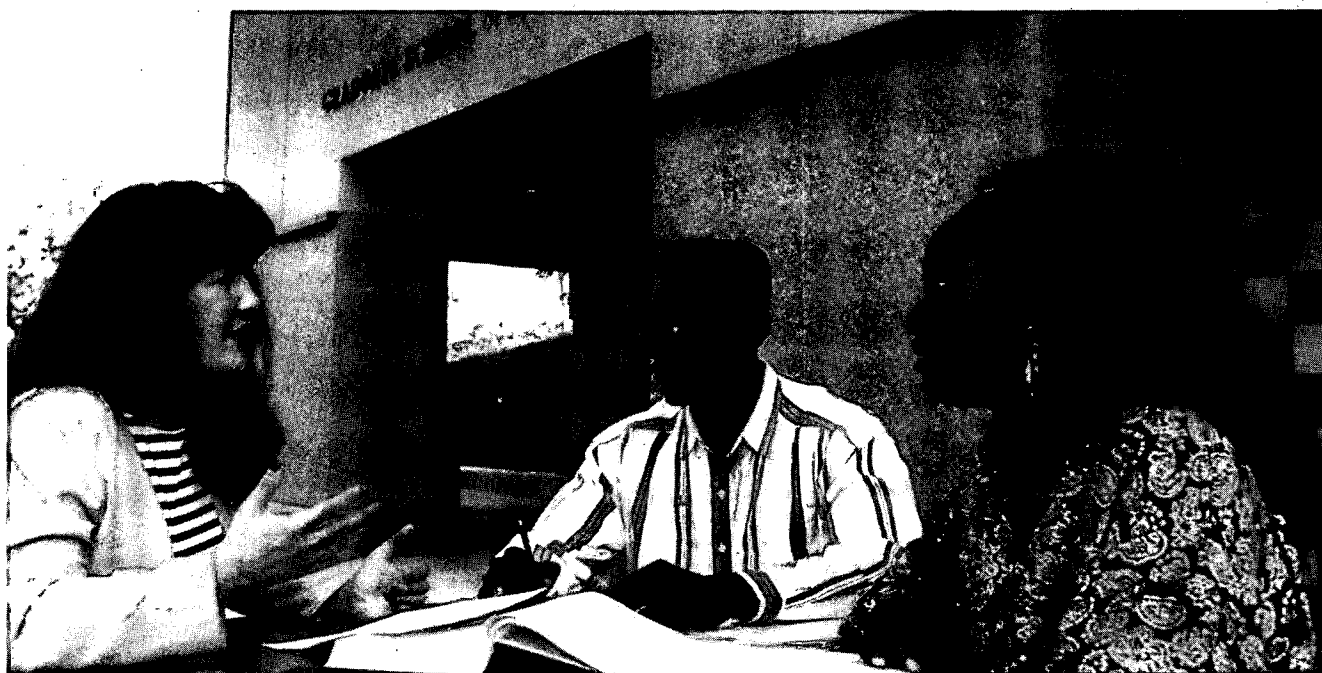
Evaluation of the applicant's file for admission to the Master's and Ph.D. degree programs will consist of an integrated assessment of all materials (test scores, transcripts of previous academic work, statement of purpose, and letters of recommendation). The University admission standard of a 3.0 or 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 GSM is 570.

Requests for application material should be addressed to the Graduate School of Management, Admissions Office, University of California, Irvine, CA 92717.

Doctor of Philosophy in Administration

GSM admits students for the Ph.D. in the fall quarter only. Deadline for application is April 1. 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, Master's thesis, essay, case study) which may be indicative generally of the applicant's interests and capabilities.

GSM offers the Ph.D. in Administration 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



The M.B.A. program curriculum includes a core of common courses followed by nine electives. Graduate School of Management students plan their program of study with assistance from their academic advisor.

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., organizational behavior, operations research, management information systems, finance, accounting, marketing, and strategy/policy. 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. There are no foreign language requirements in the GSM Ph.D. program.

Although there is considerable variation in the length of time beyond a Master's degree needed to complete the Ph.D., a realistic range is four to six years. The Ph.D. program is divided into three phases: preliminary, 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 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.

Master's Degree Programs

GSM admits students for study leading to the Master's degrees in the fall quarter. The deadline for completion of all phases of the application procedure is May 1. In addition to the general University rules governing admission to graduate study, GSM normally requires the following:

1. Those applicants seeking to be admitted to the M.B.A. program are required to take the Graduate Management Admission Test (GMAT).
2. College-level mathematics including a course in both introductory calculus and statistics with probability. Applicants without adequate mathematical preparation may be admitted with the condition that they complete preliminary courses

with a grade of B or better. These courses should be completed by fall quarter. Undergraduate courses in both the social sciences (e.g., economics, psychology, sociology) and information and computer sciences are *strongly recommended*. Students also are encouraged to undertake intensive course work in the culture, history, geography, economy, politics, and language of specific foreign countries.

The Graduate School of Management offers the M.B.A. (Master of Business Administration) degree which requires a minimum of 23 quarter courses (92 units) with a minimum grade point average of 3.0 in the Core and overall.

The two-year Master's degree program curriculum consists of courses divided into two groups designed to achieve specific educational objectives. The courses are divided as follows: 14 required Common Core Courses and nine elective courses which students select to emphasize career goals and educational interests. A thesis is not required.

The 3-2 Program for Undergraduates

In addition to the two-year Master's program for students who have already received a bachelor's degree, outstanding UCI undergraduate students may enter a cooperative 3-2 Program with GSM and most other campus units. Acceptance into the 3-2 Program constitutes advance admission to the graduate program. Such students complete their undergraduate major requirements by the end of the junior year. During their senior year, they take graduate courses in GSM. These courses are used to satisfy their undergraduate unit requirements, and at the same time apply toward their graduate degrees. Successful completion of the requirements in the program normally leads to the bachelor's degree in the cooperating discipline after the fourth year, and an M.B.A. degree after the fifth year. Students should consult with their academic counselor in their major School for further information about completing undergraduate requirements in three years. Students contemplating entering such a program should contact the Graduate School of Management 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 GSM graduate-level courses.

Required Course Work

Common Core Courses, each of which is four units, are: Management of Complex Organizations, Statistics for Management, Operations Research for Management, Organizational Analysis for Management, Financial and Managerial Accounting for Management, Microeconomics and Macroeconomics for Management, Government and Public Policy, Information and Computer Systems for Management, Marketing for Management, Managerial Finance I, Operations Management, Business Strategy.

The remaining course work consists of nine electives. 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.

Special Opportunities

To complement the academic curriculum of GSM, a Management Internship Program provides practical application and work experience to selected GSM Master's students. Student interns are employed in administrative positions by local organizations. Course credit is available for participants in the Internship Program through the course "Management Internship Seminar." GSM faculty and organizational representatives, as well as student interns, participate in this seminar which deals with specific topics and projects encountered by the interns in their positions.

The Graduate School of Management offers an emphasis in Health Care Management within the M.B.A. program. The emphasis provides training not only in health care and related issues, but also exposes students to professionals in the areas of management, finance, marketing, and strategic planning. Skills in these areas are critical to the success of health care organizations in the 1990s and beyond.

In today's interconnected global business world, it has become increasingly important for management students to learn to operate in an international environment. At GSM, M.B.A. students 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 GSM course work in international management, prepares students for the demands and complexities of the growing global economic environment. Currently, GSM has exchange relationships with the University of New South Wales, Sydney, Australia; ESSEC Graduate School of Management, Cergy-Pontoise, France; Katholieke University, Leuven, Belgium; and Tsinghua University, Beijing, China. GSM is actively seeking to develop relationships with other outstanding institutions.

Opportunities for students to take part in ongoing research exist through two Universitywide research units based on the Irvine campus. Through the Public Policy Research Organization (PPRO) a student may participate in research on significant public policy issues. PPRO projects are multidisciplinary by nature. The unit offers a unique opportunity for students to interact with scholars from allied disciplines such as social science, information and computer science, and social ecology. The Institute of Transportation Studies (ITS) conducts research in the areas of urban transportation policy and planning, transit management and labor relations, and transportation system evaluation. Qualified GSM students may participate in ITS projects as research assistants.

Placement Services

The GSM Placement Office, 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 Placement Office and students.

Executive M.B.A. Program

The Executive M.B.A. Program is designed for managers and professionals who are highly motivated toward a career in management of organizations and for those currently in executive positions. It enables participants to enhance their management skills while obtaining a high-quality advanced education. Students may continue in their full-time professional roles while enrolled in the program. Limited class sizes are maintained, and all participants gain extensive work and managerial experience.

The program consists of a 92-unit course of study completed on alternating Fridays and Saturdays, with three five-day residential sessions held during the 21-month sequence. Emphasis is placed on organizational and interpersonal skills; increased competence in specific management techniques; overall management training; and developing an understanding of the integration of business and the environment.

Further information may be obtained by contacting the Director, Executive M.B.A. Program, Graduate School of Management, University of California, Irvine, CA 92717; telephone (714) 856-7105.

Fully Employed M.B.A. Program

The Fully Employed M.B.A. program gives upwardly mobile individuals an opportunity to earn an M.B.A. degree with minimal disruption to their professional or personal lives. Students attend classes one evening a week and a half day on Saturday during the three-year program.

The 92-unit 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 four extended weekend residential sessions. 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 Director, Fully Employed M.B.A. Program, Graduate School of Management, University of California, Irvine, CA 92717; telephone (714) 856-8466.

Undergraduate Minor in Management

The GSM faculty, and the Dean of Undergraduate Studies, offer an undergraduate minor in Management. The minor consists of seven courses: one lower-division introductory course and six upper-division courses.

In establishing the GSM 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 administration of organizations as a way of gaining appreciation for a significant aspect of the culture, (2) students preparing for careers in other fields that require some knowledge of administration but

not a high concentration in the field, and (3) students who expect to go on to graduate work in administration and 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. The deadline for completion of the application is June 1. Interested students may obtain further information from the GSM Student Affairs Office, 220 Graduate School of Management; telephone (714) 856-4950.

Prerequisite Courses

The following are prerequisites for enrolling in the upper-division undergraduate minor courses: Management 5; Economics 20A and 20C; Mathematics 2A; and one course or one sequence selected from Anthropology 10A-B-C, Civil Engineering 105, Economics 10A-B-C, Mathematics 7, Mathematics 131A-B-C, Psychology 10A-B-C, Social Ecology 13, Social Ecology 166A-B-C, Social Sciences 10A-B-C, or Sociology 10A-B-C.

NOTE: While not required for the undergraduate minor, Economics 20B is a prerequisite for Economics 20C.

Transfer students should check with their college counselor for established equivalencies for these prerequisite courses.

Requirements for the Undergraduate Minor

Management 5, 160 or 188, 181, 183, 185, 186, and 187.

Courses in Management

Undergraduate

5 Managing in Contemporary Organizations (4) F, W, S, Summer. Overview of the field of management including an historical perspective as well as current theory and concepts, to help the student understand the manager's role. Views of basic managerial processes, e.g., planning, organizing, managing human behavior.

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.

181 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. Prerequisites: Management 5 and upper-division standing.

183 Quantitative Methods for Management (4). Basic processes and tools of managerial decision making. Identification of objectives, controllable and uncontrollable variables, phases of decision making, role of computers, quantitative tools for managerial decision making. Prerequisites: Management 5 and upper-division standing, and a basic course in statistics with probability.

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.

186 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: Management 5 and 185; upper-division standing.

187 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. Prerequisites: Management 5 and upper-division standing.

188 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: basic terminology and nomenclature, use of personal computers, and selection and feasibility assessment of information technology. Prerequisites: upper-division standing and enrollment in the minor in Management.

Graduate

200 Management of Complex Organizations (4). Focuses on the nature and functions of the managerial job in the context of the internal and external environments of complex organizations. Introduces students to the uses of managerial tools in organizational problem solving.

201A Statistics for Management (4). Lecture, four hours. Methods of statistical inference, emphasizing applications to administrative and management decision problems. Topics: classical estimation and hypothesis testing, regression, correlation, analysis of variance, nonparametric methods, and statistical decision theory. Prerequisite: basic statistics with probability.

201B Operations Research for Management (4). Lecture, four hours. Tools of mathematical decision-making with emphasis on model applicability, formulation, and interpretation. Topics: linear programming, simulation, and stochastic processes. Prerequisite: basic course in calculus. Management 201A recommended.

202 Organizational Analysis for Management (4). Focuses on human behavior in organizations. Topics include motivation and leadership, power and influence, group dynamics, and intergroup relations. Applications of job and organizational design, organizational development, and human resources management techniques are examined.

203A Financial Accounting for Management (4). Nature and purpose of accounting, principal accounting instruments, and valuation problems.

203B Managerial Accounting for Management (4). Focuses on the needs of the manager rather than the needs of stockholders and others. Introduces the concepts and tools of internal reporting. Emphasis on use of internal accounting reports and analyses for decision making. Prerequisite: Management 203A.

204A Microeconomics for Management (4). Economic analysis of individual decision units. Topics: introduction to demand and supply curves, production functions, cost curves, equilibrium of the firm, perfect competition, monopoly, imperfect competition, demand and supply of inputs. A knowledge of algebra and elementary calculus is assumed. Prerequisites: calculus and linear algebra.

204B Macroeconomics for Management (4). Principal determinants of national income and employment, with emphasis on concepts, tools, and data. Application of classical, Keynesian, and other models to fiscal and monetary policy. Prerequisites: calculus and linear algebra; Management 204A.

205 Principles of Marketing for Management (4). Introduction to the field of marketing. Objectives include: developing familiarity with terms, techniques, and institutions in a marketing environment; acquainting students with the type of decisions made by marketing managers, and the factors influencing these decisions.

206 Government and Public Policy (4). Political analysis related to management of organizations. Topics: political environment of management, concepts and processes central to political analysis, bureaucratic politics, politics and the manager.

207 Information and Computer Systems for Management (4). Introduction to computer systems and technology; introduction to management-oriented applications of computing; opportunity for hands-on experience for management-related tasks. No prior computer experience required.

208 Operations Management (4). Introduction to philosophy and techniques of operations and production management. Topics: project planning, risk evaluation, and decisions with regard to resource allocation, materials and inventory, service, scheduling, distribution and facilities. A blend of quantitative and qualitative considerations. Prerequisites: Management 201A and 201B. Same as ECE281D.

209A Managerial Finance I (4). Analysis of main decision areas of financial management. Topics include present value, capital budgeting, capital market efficiency, risk and return, long-term financing alternatives, cost of capital, capital structure, dividend policy, mergers and takeovers. Prerequisites: Management 201A, 203A, 204A.

210 Business Strategy (4). Primarily a lecture-case (implemented through discussion) course. Focuses upon the decision-making processes of company managers. Draws upon a wide variety of fields: marketing, finance, production, personnel, organization, etc. Prerequisites: Management 205, 208, 209A.

Electives

209B Managerial Finance II (4). Analysis of main decision areas of financial management. Topics include present value, capital budgeting, capital market efficiency, risk and return, long-term financing alternatives, cost of capital, capital structure, dividend policy, mergers and takeovers. Prerequisite: Management 209A.

211 Forecasting and Futures Research (4). Basic theory and techniques used to forecast future activities in technological, economic, social, and political arenas. Impact of forecasting on managerial decision making. Prerequisites: Management 201A and 201B.

212 Advanced Seminar in Business Administration (4). Seminar, three hours. Further exploration of selected topics from Management 210. Prerequisite: Management 210.

213 Industry Competitive Analysis (4). Provides an understanding of the concepts useful for analyzing industries and determining the sources of competitive advantage. Designed to broaden students knowledge of real-life competitive environments by applying state-of-the-art concepts to a rich array of industry structural settings. Prerequisites: Management 203A, 205, 209A, 210.

214 Entrepreneurship (4). Examines the talents, experience, knowledge, and other resources needed to start a successful growing enterprise. Looks into the way in which businesses are started and the way that they grow.

220 Organizational Change (4). Seminar, three hours. Processes and technologies for bringing about change in organizations. Emphasis on rapidly growing body of theory, concepts, and techniques dealing with ways in which organizations can become more adaptive and meet challenges of modern society. Prerequisites: Management 200 and 202, or consent of instructor.

221 Methods of Organizational Research (4). Seminar, three hours. Development of critical-analytical skills criticizing published research and theory. Necessary skills to design research effectively. Prerequisites: Management 200 and 202, or consent of instructor.

222A-B-C The Consultative Process (4-4-4). Process and dimensions of the consultant's role. Topics include identification and definition of the client system, establishing contracts, ethics in consulting, tools and techniques in consultation, terminating the relationship. Prerequisite: Management 200.

223 Interpersonal Dynamics (4). Theory and practice devoted to nature and significance of interpersonal dynamics in organizational and administrative contexts. Opportunity to enhance awareness of interpersonal style and impact, to develop increased competence interpersonally. Prerequisite: Management 200.

224 Seminar in Human Resources Management (4). Basic topics in personnel and human resources management, including personnel systems, underlying assumptions and values expressed by human resources policies, staffing organizations, training and development, and performance appraisal systems. Prerequisites: Management 200, 202.

225 Advanced Micro-Organizational Behavior (4). Seminar, three hours. Recent developments in the areas of motivation, leadership, power and influence, communication, and group and intergroup relations are explored. Current research and theory are applied to the practical problems of behavior in organizations. Prerequisites: Management 200, 202.

226 Advanced Macro-Organizational Behavior (4). Seminar, three hours. Recent developments in organizational theory. Topics include the rational model of organizations and challenges to the rational model such as the institutional model, the natural evaluation model, and organizations as cultural systems. Prerequisites: Management 200, 202.

227 Doctoral Seminar in Organizational Behavior (4). Seminar, three hours. Examines recent research and literature in the field of organizational behavior. Open only to advanced Ph.D. students in organizational behavior and related areas.

231A-B-C Financial Reporting Standards (4-4-4). Standards required of public and business organizations when preparing financial reports in accordance with APB, FASB, and SEC rules, and the effects such rules may have on individual organizations or societal sectors. Prerequisites: 231A: Management 203A; 231B: Management 203A and 231A; 231C: Management 203A and 231B.

232 Federal Taxation (4) S. Methods of researching federal laws governing income taxation of individuals and corporations, and provisions for a tax-exempt status. Prerequisite: Management 203A.

233 Financial Auditing (4). Concepts and techniques of organizational auditing as an extension of financial audit methodology. How organizational auditing improves goal attainment by providing reliable information on the effectiveness and efficiency of organizational activities. Public and private organization cases evaluated via organizational auditing. Prerequisite: Management 203A.

234 Financial Statement Analysis (4). How accounting information may be used for analysis and decision making. Measurements from external accounting statements may be used in the form of ratio comparisons to directly measure several economic concepts. Prerequisite: Management 203A.

235 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. Prerequisites: Management 203A, 203B.

241 Money and Banking I (4). Application of interest theory and flow of funds analysis to the short- and long-term markets. Advanced analysis of interest rates, market efficiency term structure, monetary policy, bond ratings, and flow of funds. Prerequisites: Management 201B, 209B, and macroeconomics.

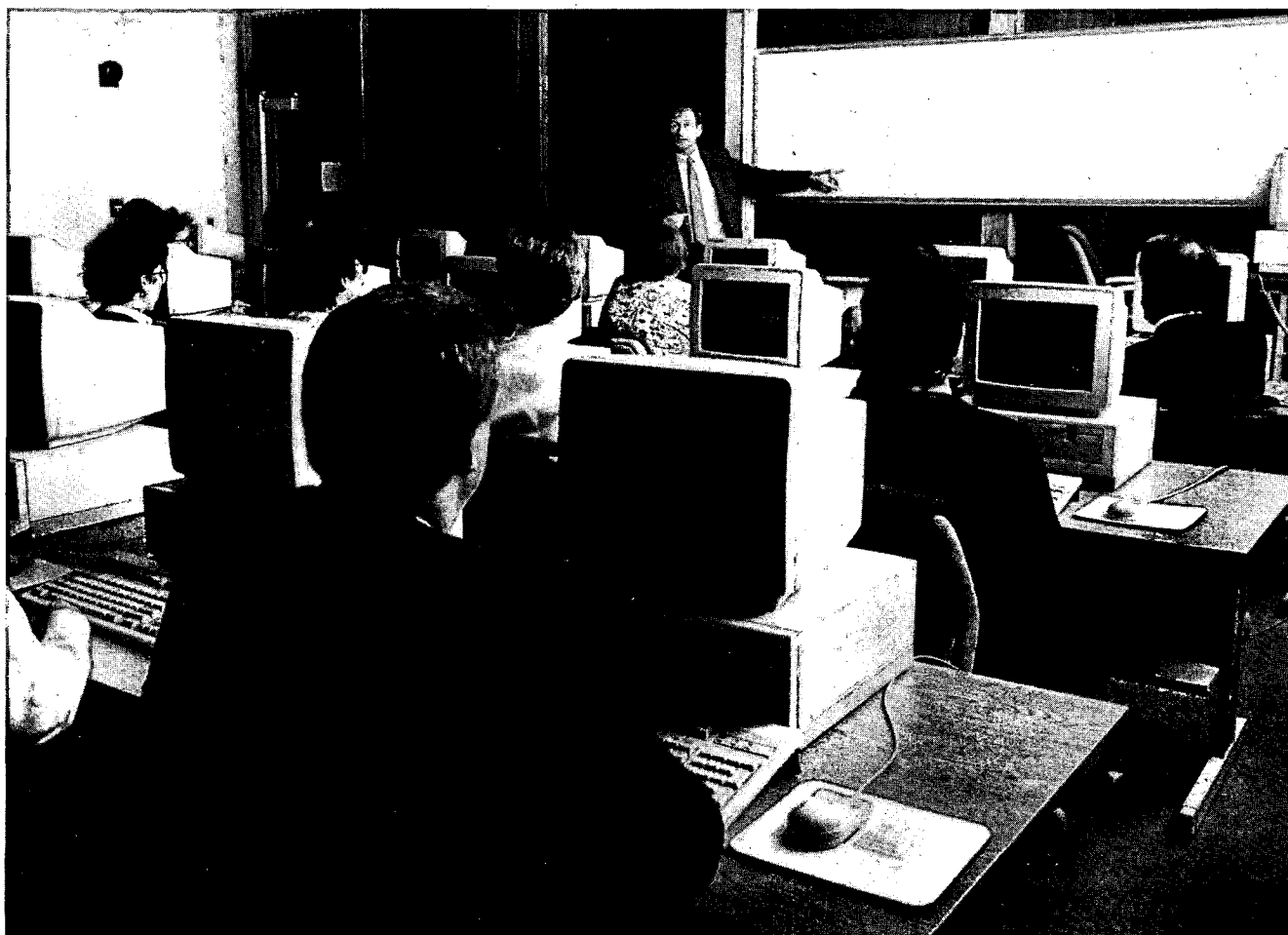
242 Portfolio Management (4). Advanced portfolio decision-making. Topics include index models, portfolio performance measures, bond portfolio management and interest immunization, stock market anomalies and market efficiency. Prerequisites: Management 201B, 209B.

243 Investments (4). Foundations of investment management. Focuses on utility theory, asset pricing theory, factor models, and performance assessment. Prerequisites: Management 201B, 204B, 209B.

244 Multinational Finance (4). Determination of foreign exchange rate and relationships of international financial markets. Financial problems in management of multinational business. Prerequisites: Management 201B, 204B, 209A, or consent of instructor.

245 Financial Institutions I (4). Study of the financial policies and practices of commercial banks, savings and loan associations, pension funds, and financial institutions. Focuses on problems in managing financial institutions. Topics include risk management, regulatory issues, deposit insurance, industry conditions, competitive strategies, and innovation. Prerequisites: 201B, 204B, 209B, and macroeconomics.

246 Mortgage Banking (4). Analysis of issues in the mortgage and investment banking areas including mortgage innovations such as adjustable rate mortgages, mortgage-backed securities, hedging risk of holding mortgage-related instruments, and identification and analysis of developments in the industry. Prerequisites: Management 201B, 209B.



Graduate School of Management students use computing technology in virtually every course and gain a solid understanding of the use of computers as management tools.

247 Options Markets (4). Topics include fundamental aspects of puts and calls, market-making under the "open outcry" system, margin, arbitrage restrictions on option values, binomial-option pricing formula, Black-Scholes derivation and formula, Martingale measures, futures, interest-rate, and index options. Prerequisites: Management 201A, 201B, 204A.

248 Corporate Finance (4). Combines modern corporate financial theory with case studies. Topics include: working capital management, ratios analysis, long-term financing and cost of capital, lease financing, corporate acquisitions. Prerequisites: Management 201B, 204B, 209B.

249 Speculative Markets (4). More advanced study of futures and options markets; basis, backwardation, hedging, price estimation, storage, convenience yield, arbitrage conditions, and pricing models. Prerequisites: Management 201B, 204B, 209B.

251 Consumer Behavior (4). Examines consumer decision making process with emphasis on application of concepts and research findings from behavioral sciences to solution of marketing problems. Includes models of consumer decision making, consumer information processing, theories of attitude and attitude change, attribution theory, mass communication effects, and sociological influences on consumer decision making. Prerequisite: Management 205.

252A Marketing Research (4). Methods of measuring, examining, and predicting factors that affect the marketing process. Various aspects of the research process examined, including problem formulation, research design, data collection methods, sampling, statistical analysis, and methodological considerations. Prerequisites: Management 201A, 205. Formerly Management 252.

252B Marketing Research Project (4). Project-oriented sequel to Management 252A. Individual students pursue their own projects or teams of students work with local companies on specific marketing research problems. Involves development and coordination of project proposal from initiation to completion. Prerequisite: Management 252A.

253 Seminar in Advertising (4). Addresses the business of advertising. Topics include: media decisions, the creative process, advertising research, industrial advertising, the role of the agency, and advertising campaigns and presentations. Prerequisite: Management 205.

254 Services Marketing (4). Examines how service organizations differ in many important respects from manufacturing businesses, requiring a distinctive approach to marketing strategy, development, and execution. Considers private, public, and not-for-profit service organizations. Prerequisite: Management 205.

255 International Marketing (4). Provides an understanding of the problems and perspectives of marketing across national boundaries, and develops the analytical ability for structuring and controlling marketing programs related to overseas business. Prerequisite: Management 205.

260 Public Financial Management (4). Intergovernmental fiscal relations. Concepts and practices of public finance and governmental budgeting in the U.S. Public finance theory including theory of taxation; tools and techniques of public financial management.

261 Collective Bargaining in Public and Private Sectors (4). Focus on contemporary collective bargaining in business and government. Topics: public policy framework, union formation, contract negotiation and administration, and grievance arbitration.

262 Information Systems in Government (4). Seminar, three hours. Design, development, management, and evaluation of urban information systems, with special emphasis on trade-offs among efficiency, effectiveness, privacy, and other key values affected by alternative financing, operating, and control policies. Prerequisite: Management 207. Management 263 recommended.

263 Governmental Systems (4). Seminar, three hours. Structures, processes, interactions, and functions of evolving systems of federal, state, and local government in the U.S. viewed through multidisciplinary perspectives. Current controversies over theories and their underlying social and ideological bases.

264 Issues in Public/Private Sector Interactions (4). Types of markets and politics represented in government and business facilitation joint ventures; private production of public services; government protection of business; knowledge transfer from business and vice versa; personnel transfer between business and government.

265 Issues in Financing Health Services (4). The equity and efficiency of government policies to redistribute medical services. Economic justifications for government intervention are discussed together with appropriate taxation and expenditure policies. Specific policies analyzed include Medicare, long-term care, and mandated employer coverage.

266 Economics of Health Care Services (4). The organization and delivery of medical care services in the United States. The performance of this sector is analyzed using microeconomic analysis; the criterion of economic efficiency is used to evaluate both current and proposed public policies.

267 Management of Health Care Organizations (4). Provides knowledge from organizational psychology and organizational behavior to understand and effectively manage individuals and groups in health service organizations. Topics include power and conflict resolution, interpersonal dynamics, organizational development, decision-making, group dynamics, and performance appraisal.

268 Health Care Financial Management (4). Concepts and techniques of managerial accounting and finance for health care administrators. Topics covered include hospital revenue sources, cost accounting, budgeting, working capital management, capital financing, financial feasibility, and financial planning.

269 Strategic Planning and Marketing of Health Care Services (4). The competitive health care environment requires increased emphasis on strategy, positioning, marketing, and planning. Provides students with the concepts and methodologies employed by health care managers in the planning and implementation of innovative services and programs.

271 System Analysis and Design (4). Understanding of development process for computer-based information processing systems. Beginning stages of development process, including analysis of current system, definition of new system, documentation of the information requirement, and basic and advanced systems analysis methods and techniques. Prerequisite: Management 207.

272 Decision Support Systems (4). Seminar, three hours. Introduction to the concept of Decision Support Systems (DSS). Explores prevailing concepts through the development of topical projects related to the technology and use of DSS in organizations. Prerequisite: Management 207.

273 End-User Computing (4). Explores the technical and managerial implications of end-user computing by combining hands-on experience with an examination of pertinent computational and managerial issues for end-user computing success. Prerequisite: Management 207.

274 Database Management Systems (4). Presentation of generalized systems designed to manage the data resources of organizations. Topics include data structures, file processing and access methods, network, hierarchical and relational data models. Hands-on experience with a relational database management system. Prerequisite: Management 207.

275 Strategic Management Information Systems (4). Focuses on the economic and competitive implications of strategic information systems. Topics include the increasing importance of end-user and departmental computing, the rapid pace of change in the telecommunications environment, and the involvement of line managers in the information systems design. Prerequisite: Management 207.

276 Business Telecommunications (4). A brief overview of telecommunications technology. Topics include communication-based applications such as electronic mail systems, Videotex, micro-mainframe links, the management organizational networks and departmental computing, and the strategic potential of information systems relying on telecommunications. Prerequisite: Management 207.

277 Economics of Information Systems Management (4). Examines problems in achieving effective use of computers in organizations including control and coordination problems, pricing issues, data processing budgets, performance measurement and evaluation, and cost trends. Prerequisite: Management 207.

280 Legal Environment of Business (4). Nature, historical background, and practical operation of the American legal system and its impact upon policy making and administration in large organizations. Constitutional and political relationships which define and limit operation of systems.

281 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.

282 Selected Legal Topics (4). Selected legal issues in formation, operation, and dissolution of corporations, partnerships, and sole proprietorships; emphasis on advantages and disadvantages of each in terms of taxation, finance, obligations to third parties, and operating problems.

285 Gender and Management (4). Focuses on issues related to sex roles and management including sex roles and organizational structure, tokenism, networking, managerial style, affirmative action, sexual harassment, mentoring, and dual-career marriage.

286 Seminar on the Regulatory Process (4). Multidisciplinary investigation of the regulatory process. Topics include analysis of objectives of regulation; legal overview of the process in administrative law and organizational and historical overview. Examples include economic and environmental regulation. Prerequisite: graduate standing or consent of instructor. Same as Social Ecology 254.

290 Special Topic Seminars (4-4-4) 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, International Management, Health Care Administration, Real Estate Development.

297A Doctoral Proseminar (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.

297B Doctoral Seminar in Research Methods (4). Provides a first exposure to some fundamental issues in the conduct of research and development of the domain of knowledge relevant to their fields. Satisfactory/Unsatisfactory Only.

297C Doctoral Seminar in Statistical Analysis (4). Emphasizes techniques for the testing of hypotheses derived from organizational theory (or social science theories in general); touches lightly on traditional business statistics used in organizations. Satisfactory/Unsatisfactory Only.

297D Doctoral Dissertation Seminar (4). Focuses on the development of dissertation proposals, including selection of research questions, literature review, research design, and data analysis. Students defend proposals developed during the course. Satisfactory/Unsatisfactory Only.

297E-F-G Management Research Seminar (4-4-4). Colloquium series consisting of current research presented by GSM faculty and other distinguished scholars. Satisfactory/Unsatisfactory Only.

298A-B-C Management Intern Seminar (4-4-4). Seminar, three hours. The Management Intern Program provides students with an opportunity to put into practice concepts, skills, and tools acquired in other parts of the GSM program. Weekly seminar sessions augment internship experiences with analyses of relevant administrative issues. Intended primarily for second-year Master's students.

299 Individual Directed Study (4). Individual study under the direction of a selected faculty member. Prerequisite: determined by instructor.

Executive M.B.A. Program

Admission to the Executive M.B.A. Program is a prerequisite for enrollment in Management EP278 through EP296.

EP278 Organizational Analysis for Management (5). Introduces the analysis of behavior in organizations and organization theory. Includes individual dimensions of organizational behavior, interpersonal processes, group processes, group characteristics, intergroup relations, and organizational design. Topics emphasized are communication, motivation, leadership, influence and authority, person perception, individual differences, and conflict.

EP279 Statistics for Management (5). Introduces statistical concepts through study of their applications to the following problems: making sense of numerical information, dealing with uncertainty, sampling, analyzing relationships, forecasting, and decision making in an uncertain environment.

EP280A Managerial and Financial Accounting (7.5). Accounting for the executive. Functions, concepts, techniques, and the basic tools of accounting are emphasized. Stress is on the use of accounting information from the user's viewpoint. In-progress grading.

EP280B Managerial Finance (7.5). Examines the function in the short and long term. Emphasis on the ability to analyze financial problems, such as the cost of a loan, whether to undertake a project, and whether to lease or buy. Topics include the financial infrastructure of the U.S. and world economies. In-progress grading.

EP281A Managerial and Macroeconomics (7.5). Focuses on development of a basic understanding of the market and analysis of supply and demand. Students analyze real-world problems with models developed in class and evaluate the consequences of alternative actions. Introduction to macroeconomic analysis. Defines concepts of unemployment, inflation, and aggregate output; methods of forecasting macroeconomic activity. In-progress grading. Formerly Management EP281.

EP282A Operations Research for Management (5). Focuses on the application of the quantitative model-building approach to problem solving by integrating modern computer technology with quantitative techniques. Emphasis on problems that are amenable to quantitative analysis; mathematical model business decision making situations; computer output arising from the numerical analysis of models and the managerial significance of the results.

EP282B Operations Management (5). Focuses both on the elements associated with the design and operation of productive systems and the integration of these elements within the overall corporate strategy. Contemporary issues such as international management practice, the universal use of computers, and advances in automation and robotics are introduced as appropriate.

EP284 Marketing Principles and Strategy (5). Provides a basic understanding of the marketing function in a variety of organizations: profit and nonprofit, product- and service-oriented, consumer- and industry-oriented. Emphasis on the role of strategy as it relates to the marketing function and the total organizational plan.

EP286 Business Policy and Strategy (5). Focuses on the responsibilities of a general manager of the company and tasks that are performed to determine the shape, character, and future of the total enterprise.

EP287 Business and Government (5). Focuses on political theories, concepts, and tools of analysis and how they explain business/government interaction; views how political constraints affect policymaking in the firm and business/government joint ventures; focuses on knowledge and personnel transfer between business and government and the private production of public services.

EP288 International Management (5). Examines many of the significant policy problems encountered by the multinational company including ownership options, product-market entry strategies; organizational arrangements; and policies for control.

EP289 Issues in Contemporary Management (5). Demonstrates the relevance of and provides an overview of what has been done in anticipating and shaping the future. Tolls and sources of information are introduced. An awareness of the merging issues which may shape the future of organizations, industries, and nations is stressed.

EP290 Special Topic Seminar (2.5 to 5). During winter and spring quarters, special topic seminars are offered in the 290 series. Examples of possible topics include entrepreneurship, health care management, production management, international marketing, human resources management. These seminars are not sequential and may be repeated for credit providing the topic varies.

EP294 Introduction to Management (7) S. Introduces the process of managing. Assists students in acquiring a more global understanding of the managerial task and becoming acquainted with the values and attitudes typically thought to be characteristics of the profession. In addition, introduction to the Executive M.B.A. Program curriculum.

EP295 Management Information Systems (8). Acquaints executives with the successful implementation and use of computers in organizations. Emphasis on basic operations of computer systems and capabilities; organizational computer applications; roles played by management and users in the coordination, planning, development, and implementation of computer technology in organizations. Formerly Management EP283.

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.

Teacher Education

Alan Hoffer, **Director**

422 Social Science Tower

General Information: (714) 856-5117

Faculty

T. Jean Adenika, Ph.D. Florida State University, *Supervisor of Teacher Education* (health and science education; multicultural education)

Joan S. Bissell, Ed.D. Harvard University, *Senior Lecturer* (learning theory, research and evaluation, educational policy)

Carolyn L. Bouldin, Ed.D. Nova University, *Coordinator of the Teacher Intern Program and Supervisor of Teacher Education* (elementary social science)

Kimberly Burge, M.A. University of California, Los Angeles, *Lecturer* (applied technology)

Linda Clinard, Ph.D. University of Michigan, *Lecturer* (reading)

Alan R. Hoffer, Ph.D. University of Michigan, *Director of Teacher Education and Professor of Education* (mathematics and computer education)

Ann P. Kaganoff, Ph.D. University of California, Santa Barbara, *Supervisor of Teacher Education*

Virginia Kelly, M.S. California State University, Fullerton, *Supervisor of Teacher Education* (special education)

Barbara C. Marshall, Ed.D. State University of New York at Buffalo, *Supervisor of Teacher Education* (English)

Billie N. Masters, Ph.D. University of California, Irvine, *Supervisor of Teacher Education* (secondary reading; learning disabilities)

Nick V. Messina, Ed.D. United States International University, *Associate Director of Teacher Education and Lecturer in Teacher Education* (reading, mathematics)

Susan M. Meyers, M.S. University of Wisconsin, *Supervisor of Teacher Education* (intern program)

Carol Booth Olson, Ph.D. University of California, Los Angeles, *Academic Coordinator* (UCI Writing Project)

Rita W. Peterson, Ph.D. University of California, Berkeley, *Senior Lecturer in Education* (science education)

Mary W. Roosevelt, National Froebel Foundation Teaching Degree, University of London, *Supervisor of Teacher Education* (elementary education)

Robin Scarcella, Ph.D. University of Southern California, *Associate Professor of Education* (linguistics, bilingual emphasis)

Myron Simon, Ed.D. University of Michigan, *Professor of Education and English* (methods and philosophy of education)

Eleanor P. Wynne, M.A. University of Washington, *Supervisor of Teacher Education* (early childhood and special education)

The Office of Teacher Education is dedicated to a high level of academic scholarship in its professional programs and to excellence in the preparation of teachers and school administrators. It offers programs which lead to credentials required by those who teach or administer in the public and private schools of California.

Faculty associated with the Office of Teacher Education include distinguished scholars, researchers, and authors of national or international reputation. Most faculty have themselves taught in public or private schools or served as administrators, and all have shown commitment to the continued improvement of education through the processes of professional study, the development of new approaches to teaching, and the design or publication of innovative and scholarly courses of study.

The Office of Teacher Education is organized around the credential programs it offers. Faculty members generally are associated with the credential programs representing their areas of expertise and interest. The programs provide opportunities for interaction among students and faculty who share common interests.

Credential Programs

The Office of Teacher Education offers programs which lead to California teaching credentials as established by the Teacher Preparation and Licensing Law of 1970, known generally as the Ryan Act. In addition, a program leading to the Administrative Services Credential is offered.

There are two basic teaching credentials in California: the Single Subject Credential and the Multiple Subject Credential. They are called basic because all other teaching and most non-teaching credentials have one of these two credentials as prerequisites. UCI offers two paths to the teaching credential: the Intern Teaching Credential Program and the Student Teaching Credential Program.

Intern Teaching Credential Program

Through the intern program, a student may earn a stipend for one year of teaching while completing either the Multiple or Single Subject Credential. The stipend is paid by the school district. To serve as an intern in a school district, the student must be enrolled as a postbaccalaureate student in the Office of Teacher Education. Students should plan to interview for the intern program during the winter quarter, and seek admission to the Teacher Education program for the spring quarter to enroll in required courses before beginning their one-year internship. Intern candidates are selected by participating schools and the University based on the background and experience of the teacher candidate, the needs of the particular school, and the candidate's eligibility for the University's Teacher Education program. The number of internships varies from year to year. For further information see the intern secretary in the Office of Teacher Education.

Student Teaching Credential Program

Teaching credentials authorized by the 1970 credential law are not determined by grade level (i.e., elementary and secondary) but by the type of instructional situation (multiple or single subject). Each credential carries K-12 authorization. These credentials are awarded by the Commission on Teacher Credentialing upon recommendation of the UCI Office of Teacher Education and are required in order to teach or serve in a professional capacity in any public school in California.

Preliminary and Professional Clear Credentials

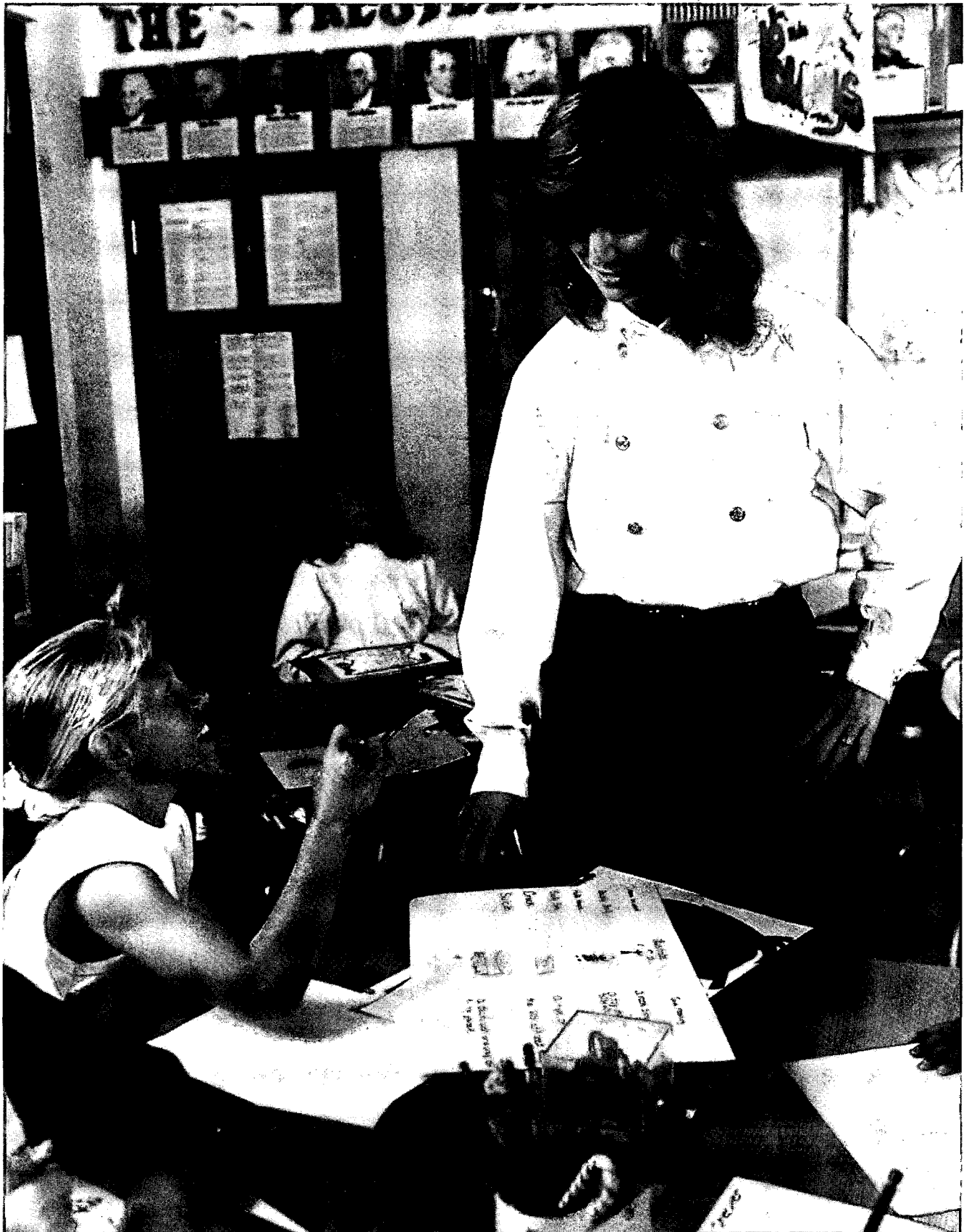
Multiple and Single Subject Credentials are of two types:

The Preliminary Credential. The Preliminary Credential is awarded by the State upon completion of the baccalaureate, the professional education sequence, a course in the teaching of reading, student teaching, completion of the Introduction to Educational Technology requirement, a course or examination covering the U.S. Constitution, a passing score on the California Basic Educational Skills Test, and by passing the National Teacher Examination or completing an approved waiver as required by the Ryan Act.

Under the present program, a student can be authorized to teach in California prior to the completion of the fifth year. However, the fifth year must be completed within five years after the preliminary credential is issued.

A certificate of completion is awarded to students satisfactorily completing requirements for a credential.

The Professional Clear Credential. The Professional Clear Credential cannot be awarded by the State until the completion of (a) a baccalaureate degree, (b) an approved program, and (c) a fifth year.



Student teaching experience is an integral component of UCI's teaching credential programs and includes classroom instruction, lesson preparation, faculty meetings, and parent conferences.

Single Subject Instruction Credential

"Single subject instruction" means the practice of assigning teachers to specified subject matter courses, as is commonly practiced in California high schools and junior high schools. Teachers who are authorized for single subject instruction may be assigned, with their consent, to teach any subject in the authorized fields, at any grade level, but normally in a departmentalized secondary school. UCI is approved for this credential. Single Subject Instruction Credentials are authorized by the State of California in art, English, foreign languages, history, life science, mathematics, music, physical science, social science, as well as agriculture, business, government, health science, home economics, industrial arts, and physical education.

Candidates who enroll in the Single Subject Credential program at UCI generally are required to take the following courses: Education 101, 102A-G (students enroll in the section of their major), 105B, 105LB, 162 (usually taken after student teaching), 173, 174, 302A, 302LA, 302B, 302LB, 320A-B-C-D-E, and 380.

Sample Fifth-Year Program — Single Subject Credential

Fall	Winter	Spring
Ed 102	Ed 101	Ed 320C, D, E
Ed 105B, LB	Ed 320A, B	
Ed 174	Ed 302B, LB	
Ed 302A, LA		

Ed. 173 is a prerequisite, to be taken before entering the program.

With the consent of their advisor, students also may enroll in Ed. 162 or 380 in the spring quarter.

Multiple Subject Instruction Credential

"Multiple subject instruction" means the practice of assigning teachers to multiple subject matter instruction, as commonly practiced in California elementary schools. Teachers who are authorized for multiple subject instruction may be assigned, with their consent, to teach in any self-contained classroom: preschool, kindergarten, and grades 1–12 inclusive, but normally the assignment is in the elementary school. UCI is approved for this credential.

Candidates who enroll in the Multiple Subject Credential program at UCI generally are required to take the following courses: Education 105A, 105LA, 110A, 110B, 110C, 110D, 162 (usually taken after student teaching), 173, 174, 300A-B-C-D-E, 301A, 301LA, 301B, 301LB, and 380.

Sample Fifth-Year Program — Multiple Subject Credential

Fall	Winter	Spring
Ed 105A	Ed 105LA	Ed 110D
Ed 110B	Ed 110A	Ed 300C, D, E
Ed 110C	Ed 300A, B	
Ed 174	Ed 301B, LB	
Ed 301A, LA		

Ed. 173 is a prerequisite, to be taken before entering the program.

Candidates desiring both Single and Multiple Subject Credentials may apply the basic professional courses of Education 105A, 105LA, 162, 173, 174, 301A, 301LA, 301B, 301LB, and 380 toward both credentials, but must complete Education 101, 102, 110A, 110B, 110C, 110D; student teach in both areas; demonstrate competence by passing appropriate State-mandated subject examinations where needed; and pass the California Basic Educational Skills Test (CBEST).

Specialist Credentials

The Specialist Credential authorizes teaching in the specialization area at any grade level from preschool through grade 12. In order to qualify for specialist credentials, the applicant must have a valid basic teaching credential (either the Single Subject or Multiple Subject Credential) and complete a specialized program of professional preparation in an approved program. The State of California authorizes seven specialist credential categories: early childhood, bilingual/cross-cultural, mathematics, reading, agriculture, health science, and special education. UCI offers preparation for Specialist Credentials in the special education areas of the learning handicapped and the severely handicapped. Students interested in the details about Specialist Credentials should make an appointment for program counseling with the special education coordinator in the Office of Teacher Education.

Special Education Specialist Credentials. UCI is approved for two areas of the Special Education Specialist Credential: Learning Handicapped and Severely Handicapped.

The Resource Specialist Certificate of Competence. The Resource Specialist Certificate of Competence requires possession of a valid Special Education Credential, and three or more years of teaching experience, including both regular and special education teaching experience. A clear Resource Specialist Certificate of Competence authorizes service only if a valid Special Education Credential, other than an emergency credential, is held concurrently. The UCI program leading to the clear Resource Specialist Certificate of Competence is a 16 quarter-unit program divided into four courses, and followed by an exit assessment.

Bilingual/Cross-Cultural Emphasis

The Bilingual/Cross-Cultural Emphasis is a specialization in addition to a regular teaching credential. This means that a candidate must fulfill all the necessary requirements for a basic teaching credential. The UCI program is limited to the development of a bilingual capacity in Spanish only as the second language in the Multiple Subject Credential Program.

At UCI the Department of Spanish and Portuguese offers a B.A. with a Bilingualism and English as a Second Language Emphasis. By acquiring this undergraduate major, the student will complete a significant part of the specific requirements for a Bilingual/Cross-Cultural Emphasis. This is the best kind of preparation for the program leading to a Bilingual/Cross-Cultural Emphasis. Entry and exit examinations are required for this program.

Services Credential

The Ryan Act provides for five categories of nonteaching credentials which authorize their holders to provide specific nonclassroom services to public schools. Services Credentials are issued by the State in pupil personnel services, administrative services, health services, library services, and clinical-rehabilitative services. UCI offers a program which leads to an Administrative Services Credential, generally required by school administrators. This credential is effective for grades K–12.

The Administrative Services Credential is a two-stage credential which requires completion of 36 quarter units for a Preliminary Administrative Services Credential and completion of an additional 36 quarter units for the Professional Administrative Services Credential. Prerequisites for the Preliminary Administrative Services Credential include a basic teaching credential, three years of acceptable full-time teaching experience, completion of Education 162 (or its equivalent), and a passing score on the California Basic Educational Skills Test. Prerequisites for the Professional Administrative Credential include two years of successful full-time school administrative experience in public schools requiring

the Preliminary Credential. The Preliminary Credential is valid for five years while the candidate studies for the Professional Credential. Students interested in these credentials should make an appointment with a counselor in the Office of Teacher Education.

Planning a Program of Study

Each credential program consists of the equivalent of one year of full-time postbaccalaureate study, and it is possible for students to take courses toward a credential in their undergraduate program. All students interested in pursuing a credential should contact an academic counselor in Teacher Education.

The Office of Teacher Education program recommends two field experiences prior to entering the program. One experience might be a tutoring assignment during the freshman or sophomore year and another might be serving as a teacher's aide in the junior year. Course credit for field experience is available through Education 100. Field experience programs may be cooperative arrangements between the University and the public school districts to help provide UCI students with experience that will prepare them for their future work as teachers. However, field experience can come from any of several public or private agencies which provide instruction so long as students work under the supervision of an experienced teacher. As a tutor, the college student usually works with the public school student on a one-to-one basis. As a teacher's aide, the student typically works for a block of time per week for one quarter with a teacher in the classroom. During this time, students have a variety of opportunities to help the experienced teacher enrich the course of study and to participate within the classroom. Ultimately it is in the classroom where the problems of teaching are either solved or ignored; hence here is where teacher preparation begins. This experience will assist the UCI student in making a more realistic career choice. It also involves the public school in the selection of future student teachers.

In addition, students in the Teacher of Tomorrow Club have the opportunity to interact with teachers, administrators, and guest speakers who provide current information regarding the teaching profession. The Club meets twice a quarter. Information is available from the advisor, Dr. Carolyn Bouldin, telephone (714) 856-7834.

Preparation for Admission

Students are required to (1) pass the California Basic Educational Skills Test (CBEST) prior to applying for admission to Teacher Education and (2) successfully complete the National Teacher Examination (NTE) or four-fifths of an approved waiver program prior to beginning their student teaching (normally by the second quarter of enrollment).

Reservations to take both examinations must be made well in advance. Students are urged to contact the Office of Teacher Education for information about the tests and test dates six months before they plan to enter the program.

Admission to the Teacher Education Program

All students are welcome to apply for admission to the Teacher Education program. Students are usually admitted to the Student Teacher Credential Program in the fall quarter and to the Intern Teaching Credential Program in the spring quarter. Information and applications are available from the Office of Teacher Education, 422 Social Science Tower. Admission is based on a broad index:

Academic Achievement. Completion of a baccalaureate degree from an accredited institution and a grade point average of 3.0

will support consideration of admission to the Teacher Education program at UCI. (Undergraduates who enroll in courses leading to credentials still must be admitted to a fifth year of study—to be described later.) Two official transcripts from each college attended are required.

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 prior to beginning student teaching. This process is primarily a fingerprint check to determine that the student is clear of criminal conviction. See a counselor in the Office of Teacher Education for advice on how to handle this process.

Interview. An Admissions Committee representative is available to meet with prospective students. All admitted to the program will have a personal interview with a faculty member or a member of the Committee.

Written Recommendations. Three letters of recommendation for admission are required. Such recommendations should indicate the student's ability to perform graduate-level work.

CBEST. Evidence of having passed the California Basic Educational Skills Test should accompany the application for admission.

Admission. Both the UCI academic department corresponding to the student's academic major and the Office of Teacher Education must recommend the admission of applicants for the Single Subject Instruction Credential. The applicant's record must show evidence of academic breadth including strong undergraduate preparation in areas such as mathematics, science, and language arts and is reviewed first by the academic department and then by the Admissions Committee of the Office of Teacher Education. Admission is not automatic. Applicants may be required to pass the NTE prior to admission if they intend to teach outside their academic major.

Minimum Requirements for the Basic Teaching Credential

The minimum requirements for the teaching credential in California are established by California state law. Requirements include:

1. A baccalaureate or higher degree, in an area other than professional education, from an approved institution.
2. A fifth-year approved program of professional preparation. This means a sequence of education courses, including an all-day, full-time assignment of a semester's duration (or the equivalent) in student teaching.
3. Passage of the National Teacher Exam or its waiver via an approved academic program. Information on waivers is available from Office of Teacher Education counselors.
4. Under certain conditions the passage of the College Level Examination Program is required. See a counselor in the Office of Teacher Education for advice.
5. Demonstration of a knowledge of the various methods of teaching reading as validated by successful completion of a program of study.
6. A course or an examination covering the U.S. Constitution.
7. A fifth year of study is still required, even though a student may elect to start or complete the approved program of professional preparation as an undergraduate.
8. Successful completion of the California Basic Educational Skills Test. Applicants are required to pass this test prior to application for admission.

9. A grade point average of B or better in all required education courses.
10. A grade of B or better in all student teaching or required field experience.

The Approved Program of Professional Preparation

The "Approved Program" refers to the minimum number of education courses required for the teaching credential. UCI defines the approved program as consisting of core courses plus student teaching. Six quarter units of this instruction are required in the teaching of reading.

Passage of a Subject Matter Examination

Single Subject Examinations. California requires all students to pass the National Teacher Examination (NTE) in the area of their teaching major prior to student teaching except where particular institutions have developed an approved major which waives the NTE. Students pursuing a waiver option must complete four-fifths of the waiver prior to student teaching. Many academic majors which are commonly taught in the public schools have been waived in lieu of the National Teacher Examination. However, there are certain requirements that a student must complete while fulfilling the major in order to receive this waiver. Students should consult a counselor in the Office of Teacher Education for detailed information.

Multiple Subject Examinations. The National Teacher Examination General Knowledge section of the Core Battery is a requirement for the multiple subject credential. It includes the following areas: English, fine arts, mathematics, science, and social science. All students must pass the NTE prior to beginning student teaching or must complete at least four-fifths of a waiver program. The UCI program for the Multiple Subject Teaching Credential is approved for waiver of the examination if the student completes the required diversified program. The examination can be taken as often as necessary but should not be taken prior to the junior year.

Requirements for Waiver of the Multiple Subject National Teacher Examination. Of the student's total undergraduate program, 128 quarter hours are required to be divided as follows:

Nine courses (36 quarter units) each in two of the following areas and seven courses (28 quarter units) each in the remaining two:

- a. English (including grammar, literature, advanced composition, and speech)
- b. Social science and history (must have courses in each)
- c. Mathematics and science (must have courses in each with a minimum of three approved courses in mathematics)
- d. Fine arts, foreign language, and philosophy

Since the academic major on the UCI campus will normally fulfill one of the four areas above and the UCI breadth requirement applies to the others, meeting the four requirements is possible if planned early in the student's career.

Supplementary Authorization. Teaching minors by that name no longer exist, but it is possible to add further teaching authorizations beyond the single subject major. Students deciding to be credentialed in more than one subject area may qualify to do so in either of two ways:

1. Students may complete 30 quarter units (15 units if they are upper-division) in collegiate-level course work to develop a supplementary authorization to teach in areas differing from the single subject major. Consult a counselor in the Office of Teacher Education for details.

2. Students may pass the National Teacher Examination in any area of their choice and thus qualify for the additional authorization in that subject.

Fifth-Year Requirement

The UCI Teacher Education program defines the fifth year as 45 quarter units of upper-division work taken after the bachelor's degree is granted, or postbaccalaureate-level work. In each instance the fifth year will consist of a program, individually determined and based upon the assessed needs of the student.

Regardless of courses completed prior to the bachelor's degree, students must complete a fifth year to obtain a professional clear teaching credential. In addition to the approved program listed above for the Multiple or Single Subject Instruction Credentials, the fifth year must include the following:

1. Completion of 45 quarter units
2. Completion of the following courses:
 - a. Education 162 (Psychology and Education of the Exceptional Child)
 - b. Education 301B (Instructional Technology: Applications in the Multiple Subject Classroom) and 301LB (Multiple Subject Technology Applications Laboratory); or 302B (Instructional Technology: Resources for the Single Subject Classroom) and 302LB (Single Subject Technology Applications Laboratory)
 - c. Education 380 (Health Education for Teachers)

Provision for a Student Teaching Experience

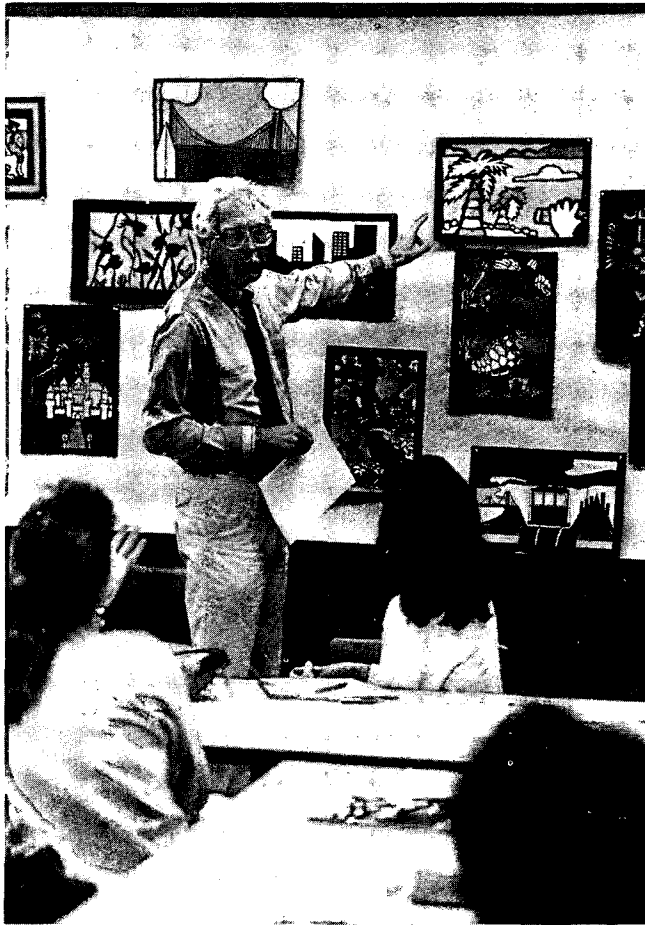
Student teaching for Single Subject student teachers (Education 320A-E) is defined as a full-day, five-day-per-week assignment, for 18 weeks (or its equivalent) in the appropriate classroom training environment. Regular seminars are held as part of the total student teaching program. Evaluation is based on performance, excellence in instruction, and professional maturity, factors which are assessed by the resident teacher, the University supervisor, and the candidate. A grade of B or better is required in student teaching in order for a student to be recommended for a teaching credential.

If competence has been demonstrated by the conclusion of the student teaching program and all other requirements are met, the student qualifies for recommendation for credential certification by UCI.

Multiple Subject Instruction candidates are assigned to teach in grades K-8. Student teaching for Multiple Subject student teachers is defined as a full-day, four-day per week assignment during the first quarter of student teaching (Education 300A-B) and a full-day, five-day per week assignment during the second quarter (Education 300C-D-E). The assignment is split to include two levels within this range. Student teaching for Multiple Subject candidates consists of assignments with increasing levels of responsibility in each assignment.

It is a joint responsibility of UCI and the school districts to guarantee that each student will have student teaching experience in a multi- or cross-cultural situation.

Clearances for student teaching are processed by the Office of Teacher Education and are contingent upon the Certificate of Clearance, a current health clearance, academic preparation clearances, and successful completion of either the National Teacher Examination (NTE) or four-fifths of an approved waiver program. A student must apply for a student teaching assignment the quarter before student teaching. Students are to consult the Office of Teacher Education for appropriate information.



Teaching strategies in elementary school arts and crafts programs are explored in Teacher Education 104E.

Courses in Education

100 Educational Strategies for Tutoring and Teacher Aiding (4-4-4) 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. Formerly Teacher Education 100A-B-C.

101 Secondary School Curriculum and Organization (4) F. Historical and current practices in curriculum concepts and procedures.

102 Methods of Teaching in the Secondary School (4) Summer. All sections of 102 are normally completed in the fifth year. Scope and sequence in the instructional program in general and in the student's major. Observing and participating in the secondary classroom required. Course is to be taken immediately prior to supervised teaching.

102A Methods of Teaching Foreign Languages in the Secondary Schools (4) F. Prerequisites: senior standing as a foreign language major and some training in linguistics, or consent of instructor.

102B Methods of Teaching History and the Social Sciences in the Secondary Schools (4) F. Methods and teaching strategies used in developing instructional programs in social science.

102C Methods of Teaching English in the Secondary Schools (4) F. Scope, sequence, and methods in teaching English and related areas in secondary schools of California. Includes articulation problems in English programs; methods and strategies for teaching writing, literature, and speech.

102D Methods of Teaching Music in the Secondary Schools (4) F. Basic concepts of music education. Teaching strategies for performance-oriented curriculum and humanities approaches.

102E Methods of Teaching Art in the Secondary Schools (4) F. Teaching strategies in the high school arts and crafts programs: skills appropriate to the high school student.

102F Methods of Teaching Mathematics in the Secondary Schools (4) F. Teaching strategies in high school mathematics programs. Emphasis on new mathematics.

102G Methods of Teaching Science (4) F. Teaching strategies in high school physical and biological science programs. Emphasis on the inquiry approaches to science.

104A Curriculum and Methods in the Elementary School (1) F, W, S. Designed to enrich students' professional preparation; focuses on preparation to teach and to integrate two or more selected areas of the elementary curriculum. May be repeated for credit once.

104E Methods of Teaching Art in the Elementary Schools (4) F. Theory and understanding of teaching strategies in elementary school arts and crafts programs. Work on developing skills appropriate for use in the elementary classroom.

105A Curriculum and Methods for Elementary School Reading (4) F, S, Summer. The teaching of reading in elementary schools. Theories and principles related to teaching reading and reading activities; teaching word recognition, phonics, comprehension, study skills, content area reading, literary appreciation; and other major approaches to reading instruction.

105LA Diagnostic-Prescriptive Reading Instruction (2) W, S, Summer. Presents formal and informal diagnostic procedures for assessing the reading strengths and weaknesses of students. Focuses on assisting the classroom teacher in organizing, analyzing, interpreting, and using diagnostic information for prescriptive teaching.

105B Reading in the Secondary Schools (4) F, Summer. Reading in the content areas. Attention to remediation in areas of word attack skills, comprehension, content clues, and decoding.

105LB Curriculum and Methods in Reading Laboratory, Secondary (2) F. Laboratory program in the public schools taken concurrently with Education 105B. Working in reading laboratories and classroom situations, putting into immediate practice the processes learned in Education 105B. Laboratory work includes a bicultural experience.

106A Education of the Preschool Child (4) F. Theoretical and practical analyses of schooling the preschool child. Curriculum development, teaching strategies, review of principal concepts and research concerning processes of learning; critical, productive, and creative thinking.

106B Administration and Supervision of ECE Programs (4) W. Designing and directing Early Childhood Education programs. Methods and techniques of management within differing ECE programs. Proposals, curriculum development, policies and procedures, budget planning, and legal responsibilities.

106C Curriculum and Methods in Elementary Education: Early Childhood Education (4) S. Diagnostic and prescriptive teaching, competency-based learning, continuous flow curriculum, continuous progress, inquiry teaching, parent and aide implementation, individualization, assessment and evaluation, and multicultural planning.

106E Child Development I: Infancy and Early Childhood (4) F, Summer. Research, theory, current controversies, trends, and techniques for study of the child and the family unit within the community setting.

106F Child Development II: Middle and Late Childhood; Preadolescent Development (4) W, Summer. Emphasis on the family and community setting. Theory, current research, and techniques for working with this age group.

106G Child Development III: Adolescence and Early Adulthood (4) S, Summer. Selected topics in individual and social behavior of the adolescent and early adult. Research, current studies, and theories applicable.

106H-I-J Practicum in Early Childhood Education (4-4-4) F, W, S, Summer. Supervised school laboratory experience in schools serving young children. Directed teaching in child development laboratories, nursery schools, day care schools, and similar approved facilities.

110A Teaching Social Studies in Elementary School (3) W, Summer. 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.

110B Teaching Mathematics in Elementary School (3) F, Summer. 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.

110C Teaching Science in Elementary School (3) F, Summer. 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.

110D Teaching Language Arts in Elementary School (3) S, Summer. An integrated approach to language arts instruction at the K–8 level emphasizing tenets of California State English/Language Arts Framework. Focus on the concept of writing and the role of the reading/writing connection in fostering critical thinking.

114 Science Education Teacher Apprentice Field Experience (4-4) F, W, S. On-the-job experience as a science teacher apprentice. Students assist public school classroom teachers in laboratory demonstrations and experiments, tutoring individuals or small groups. Pass/Not Pass Only.

124 Perspectives on Multicultural Education (4) F, W, S. Analysis of the educational, legal, health, economic, and environmental experience of American minority groups (Hispanic, Black, Asian/Pacific Islanders, and Native Americans) and women. Examination of the ideals and realities of equity in view of historical, theoretical, and current considerations. (VII-A)

140A Methods for Elementary Bilingual Teachers (4) F. Direct observation of bilingual classrooms in local elementary schools, classroom lectures, discussions, and presentations on the culture and language of the bilingual student. Same as Spanish 100B.

140B Methods for Secondary Teachers of Spanish (4) W. Communicative approaches to teaching Spanish at the secondary school level. Theory and practice of oral proficiency acquisition techniques. Required field observations. Emphasis placed on training differences for native vs. nonnative Spanish speakers. Prerequisite: consent of instructor. Same as Spanish 115.

140C Methods of Teaching English as a Second Language (4) S. Methods and materials for teaching English to speakers of other languages. Includes methodology for teaching children, adolescents, and adults. Field experience required. Recommended: Linguistics 3 and 154. Same as Spanish 114 and Linguistics 163C.

160 Learning Disabilities: Medical and Biological Dimensions (4) W, Summer. Analysis of research regarding the exceptional child, including commonalities and differences: physical and psychiatric aspects of mental retardation; instructional modifications based on the factors.

161 Learning Disabilities in the Schools (4) F, Summer. Definition and nature of learning disabilities, means of recognition, diagnosis, and remediation of learning disabilities.

162 Psychology and Education of the Exceptional Child (4) F, W, S, Summer. Nature, degree, and incidence of conditions which differentiate children deviating from normal physical, neurological, mental, and psychological patterns. Emphasis on State laws in relation to identification and education of exceptional children. Development and effective use of individualized processes and strategies.

163 Educational Planning for the Exceptional Child (4) W, Summer. Organization of classes for exceptional children including resources and mainstreaming. Emphasis on dynamics of pupil-teacher, teacher-parent, and pupil-pupil relationships. Ethical practices in communication to others about individual pupils.

164A Diagnosis and Prescription for the Learning Handicapped (4) F. Diagnosis of learning problems and remedial procedures; individualized prescriptive learning activities; analysis and evaluation of all program elements. Current issues and trends, and use of research findings in program implementation.

164B Advanced Assessment and Diagnostic Techniques (4) Summer. Assessment and diagnostic techniques used to implement California's Master Plan. Includes diagnostic/prescriptive practices, observation, record keeping, text evaluation, ability to assess teacher behavior on the learner, and interaction with a variety of classroom management systems. Includes 10 hours of field experience.

165 Educational and Vocational Implications of the Learning Handicapped (4) Summer. Educational, social, economic, and vocational implications of mental retardation and physical handicaps; current programs, services, and legal aspects; counseling exceptional pupils and their parents.

166 Educational Implications of Behavior Disorders (4) W. Remediation with behavior disorders of pupils. Emphasis on individual and classroom strategies including behavior modification. Motivational and attitudinal differences including but not limited to self-control, anxiety, and general attitudes toward learning.

167 Education of the Trainable Mentally Retarded and the Severely Multiple Handicapped (4) F. Application of developmental and learning characteristics of the trainable mentally retarded and the multiple handicapped to educational curriculum, total communication skills, planning, and materials.

168 Severely Emotionally Disturbed and Autistic Pupils in the Schools (4) W. Programming for severely emotionally disturbed and autistic pupils including diagnosing individual needs, prescribing learning activities, preparing and organizing materials, and evaluating outcomes. Systematic observation, assessment, and clinical teaching.

169 Educational and Vocational Implications of Being Severely Handicapped (4) Summer. Educational, social, economic, and vocational problems of the severely handicapped; current programs, services, and legal aspects; counseling of severely handicapped students and their parents.

170 History of Education (4) Summer. Educational experiences in this country with special reference to educational issues and problems.

173 Learning Theory and Classroom Practices (4) F, W, S, Summer. Includes learning theories, motivation, alternate management systems for learning environments, teaching behaviors, diagnosis, prescriptions, instruction treatment, evaluation, interpersonal relations, motivational skills. Letter grade only.

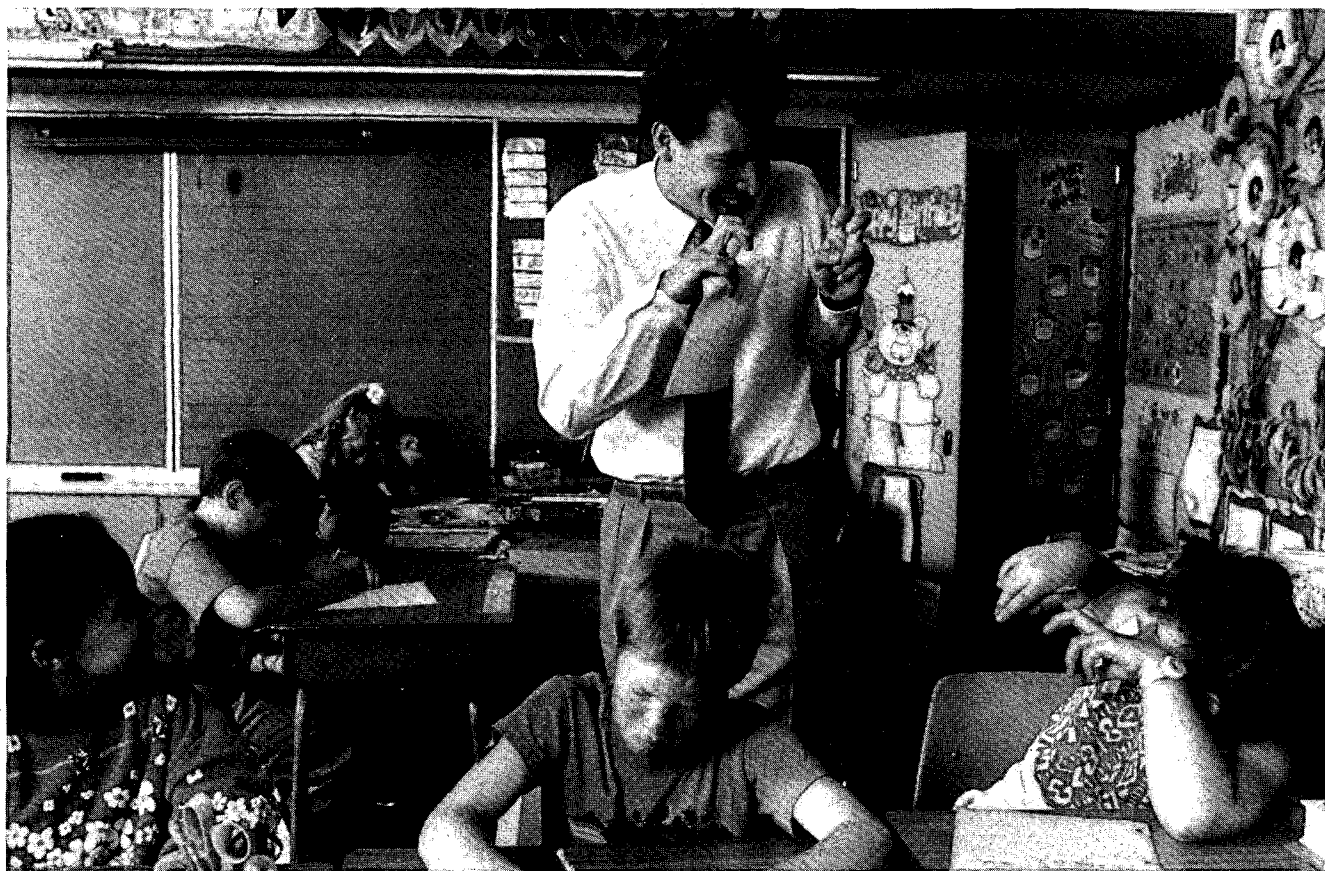
174 Learning Theory and Classroom Practices Laboratory (1) F, W, S, Summer. Students are assigned by the instructor to field experiences at a public school with a multicultural/majority-minority population. Laboratory course to be taken concurrently with required credential course work.

175 Foundations of Education (4). Historical, sociological, philosophical, and psychological aspects of education, including learning theories.

179 Advanced Composition for Teachers (4) W. Principles of formal composition and problems of teaching. Selecting handbooks and ancillary reading, marking papers, making assignments, and conducting workshops and tutorials. Same as English and Comparative Literature WR179.

180 Secondary Curriculum Grades 10–12 (4) S, Summer. Content, articulation, and expected competencies in the secondary school. The State frameworks, public school curriculum, theories, principles, and background for operational techniques for public school curriculum planning and development are studied. Open to secondary Intern Teaching Program participants only.

182J Health Education Counseling: Advanced (3) F. Provides training by health care professionals. Topics include birth control, sexually transmitted disease, stress, common illness, cancer, heart disease, nutrition, conditioning, first aid, cardiopulmonary resuscitation (CPR), and workshop presentations. CPR and first aid are required. Prerequisites: must have been selected a Peer Health Advisor the previous spring; consent of instructor.



Students become intern teachers and earn a one-year stipend from the host school district while they complete a Multiple Subject or Single Subject Credential through UCI's Intern Teaching Program.

182K Practicum in Health Education Counseling: Advanced (3) W. Advanced laboratory and seminar class sessions meeting weekly on health education and preventive health care. Health education workshops presented to campus living groups, clubs, and organizations on relevant health concerns of students. Prerequisites: Education 182J. Open only to Peer Health Advisors.

182L Practicum in Health Education Counseling: Advanced (3) S. Advanced laboratory field experience in presenting health education workshops to student groups. Participation in weekly seminars on current issues in health education and preventive health care. Prerequisites: Education 182J, 182K. Open only to Peer Health Advisors.

183 Elementary Curriculum K-8 (4) S, Summer. Content, articulation, and expected competencies in the elementary school. The State frameworks, public school curriculum, theories, principles, and background for operational techniques for public school curriculum planning and development are studied. Open to elementary Intern Teaching Program participants only.

184A Directed Field Experiences (4) S, Summer. Required for admission to the Teacher Intern Program. Assignment in public schools, working with children of varied ethnic and racial backgrounds, noting education as a bridge between cultures.

184B Directed Field Experience with Exceptional Children (4) F, W, S, Summer. Observation and participation plus laboratory activities in on-site school situations, encompassing a variety of experiences with varied types of exceptional students and students with differing racial and ethnic backgrounds.

185 The Sociology of Urban Education (4) F, W, S. Emerging issues including diversification, racial balance, equity education, White flight, community control, the city-suburban connection, involvement of the disadvantaged in decision making, biological differences, and race-related behavior.

186A Staff Development and Inservice Practices (4) Summer. Addresses process as well as content for planning staff development programs. Training in specific communication and instructional skills. Opportunities to design, implement, and evaluate inservice programs. Includes 10 hours of field experience.

186B Administrative, Legal, and Systems Change Analysis and the Resource Specialist (4) Summer. Develops dynamics of relationship between the Resource Specialist and changes in educational systems. Macro view of the Resource Specialist in group process, administrative decision making, community relations, leadership skills, organizational theory, interpersonal communication skills, all in the framework of legal mandates. Includes 10 hours of field experience.

191 Experimentation in Media of Communication and Instruction (4). Media resources, techniques, and new teaching strategies in students' respective fields. Includes printed materials, audio and visual materials, programmed materials, educational technology, and organized systems of learning.

197 Individually Arranged Field Study (4) F, W, S, Summer. Planned program for students with sufficient background to undertake the field study under direction of a faculty member who has competence in the area.

198 Directed Course Study on Special Topics (4) F, W, S, Summer. Program of laboratory experiences in the public schools set up and conducted for persons in advanced levels of teacher preparation.

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 has competence in the area.

271 Organizational Theory, Planning, and Application (4) F. Basic theory and function of human organizations as dependent and independent social entities. Concepts for understanding and managing the dynamics of group behavior and human relations. Structuring and leading groups in a

variety of organizational settings including school boards, staff, parent and community groups, regional and State organizations. Prerequisite: Preliminary Administrative Services Credential or consent of instructor.

272 Instructional Leadership (4) W. Management strategies and group dynamics associated with achieving educational goals and objectives; learning theory, instructional research, human relations, and group dynamics. Identification of strategies to meet diverse pupil needs in conjunction with educational trends and issues and the emerging needs of society. Curriculum improvement and practices. Application of computer technology to instructional practices. Prerequisite: Preliminary Administrative Services Credential or consent of instructor.

273 Evaluation (2) S. Evaluation techniques and strategies designed to provide accurate data pertaining to teacher effectiveness, pupil achievement, staff performance and the measurement of program and curriculum effectiveness. Identification of conditions that result in high- or low-level pupil learning outcomes. Effective means to compare classroom, school district goals to outcomes. Prerequisite: Preliminary Administrative Services Credential or consent of instructor.

274 Professional and Staff Development (2) F. Strategies for developing staff development programs. Application of knowledge, management skills, and instructional strategies associated with adult learners. Means of integrating organizational goals and programs for adult learning performance. Alternative approaches to enhance professional and staff development; time constraints and financing staff development programs. Prerequisite: Preliminary Administrative Services Credential or consent of instructor.

275 School Law and Political Relations (2) W. Legal framework of schools and public education. Political jurisdictions affecting educational policy. Influence of legal aspects to educational control. Political and sociological forces directly and indirectly affecting school practices. Theory of individual and group dynamics in achieving compromise, consensus, and coalitions to achieve educational goals. Prerequisite: Preliminary Administrative Services Credential or consent of instructor.

276 Fiscal Management (2) F. Organizations and management of financial and business operations. Funding sources and problems affecting financing at State and local levels. Business office operations, utilizations of personnel, budget preparation, financial management strategies and control, analysis of financial effects of contractual obligations. Identification of appropriate computer technology. Prerequisite: Preliminary Administrative Services Credential or consent of instructor.

277 Management of Human and Material Resources (2) W. Concepts, theories, and application for the development and management of human resources. Effective staff utilization patterns in consideration of personnel competencies, organizational constraints and available resources. Emerging considerations in developing and implementing effective personnel policies. Short- and long-term planning for filling personnel needs. Prerequisite: Preliminary Administrative Services Credential or consent of instructor.

278 Cultural and Socioeconomic Diversity (2) S. Contemporary issues of cultural and socioeconomic diversity in public education. Ethnic, racial, and religious composition of the State and local community. Concepts of cultural values and language diversity. Programs and procedures for meeting instructional needs of limited English proficient pupils. Principles and procedures for involving the family in school activities. Prerequisite: Preliminary Administrative Services Credential or consent of instructor.

279 Research Applied to Administrative Practice (4) S, Summer. Examination of research strategies pertinent to administrative decision-making in education. Includes attention to quantitative and qualitative research methods; experimental design; sampling techniques; questionnaire and interview construction; observation methods; data analysis and interpretation. Special attention to nonexperimental and quasi-experimental research designs. Prerequisite: Preliminary Administrative Services Credential or consent of instructor.

300A-B-C-D-E-F Supervised Teaching in the Elementary School: Multiple Subject Instruction Credential (4-4-4-4-4-4) F, W, S. Full-time student teaching assignment for a two quarter's duration. Prerequisite: Professional Program in Education.

301A Instructional Technology: Resources for the Multiple Subject Classroom (2) F, S, Summer. 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. Corequisite: Education 301LA.

301LA Multiple Subject Technology Resources Laboratory (1) F, S, Summer. Instruction and practice in operations, terminology, and capabilities of computer, audio, video, and instructional television hardware, software, and system components and other media for multiple subject classroom applications. Corequisite: Education 301A.

301B Instructional Technology: Applications in the Multiple Subject Classroom (1) W, S, Summer. Advanced methods and teaching strategies, focusing on the integration of computer-based applications in multiple subject classroom. Corequisite: Education 301LB. Prerequisites: Education 301A and 301LA.

301LB Multiple Subject Technology Applications Laboratory (1) W, S, Summer. Advanced instruction and practice in methods and teaching strategies for the integration of computer-based applications in the multiple subject classroom. Corequisite: Education 301B. Prerequisites: Education 301A and 301LA.

301C Instruction in Computer-Based Technology and Classroom Usage (5) F, W, S, Summer. Classroom uses of computer-based technologies. Includes study of hardware and software systems and components. Emphasizes computer-based technologies as tools to enhance student thinking skills, for instruction in subject areas at proper grade levels, and in management programs.

302A Instructional Technology: Resources for the Single Subject Classroom (2) F, S, Summer. 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. Corequisite: Education 302LA.

302LA Single Subject Technology Resources Laboratory (1) F, S, Summer. Instruction and practice in operations, terminology, and capabilities of computer, audio, video, and instructional television hardware, software, and system components and other media for single subject classroom applications. Corequisite: Education 302A.

302B Instructional Technology: Applications in the Multiple Subject Classroom (1) W, S, Summer. Advanced methods and teaching strategies, focusing on the integration of computer-based applications in single subject classroom. Corequisite: Education 302LB. Prerequisites: Education 302A and 302LA.

301LB Single Subject Technology Applications Laboratory (1) W, S, Summer. Advanced instruction and practice in methods and teaching strategies for the integration of computer-based applications in the multiple subject classroom. Corequisite: Education 302B. Prerequisites: Education 302A and 302LA.

303 Science in Elementary and Junior High Schools (4). Provides content, methods, and materials to revitalize elementary and junior high school science programs. Includes demonstrations and practice using variety of methods; analysis of barriers to teaching science; techniques to overcome fear of science; application of research on learning, instruction, and achievement.

303L Science in Elementary and Junior High Schools Laboratory (5). Provides science laboratory and field-trip experience to complement Education 303. Corequisite: Education 303.

304 Mathematics for Junior High School Teachers (4) Provides content and methods to revitalize junior high school mathematics programs. Includes demonstrations and practice using a variety of methods and materials; analysis of learning difficulties in mathematics; strategies to overcome fear of math; application of research on learning, instruction, and achievement.

308 Natural Science Activities for Teachers of Spanish-Speaking Students (3). Designed for elementary teachers. Introduces teachers to a series of natural science activities which can be readily used in the classroom and on school grounds. Activities are highly integrated with other classroom disciplines including social studies, art, reading, writing, and physics. Emphasis on Spanish-language materials; English translations available.

310A-B-C-D-E-F-G-H-I Intern Teaching in the Elementary School: Multiple Subject Instruction (4-4-4-4-4-4-4-4) F, W, S. Must be a contract teacher with a school district and must be enrolled as a postbaccalaureate student at the University. Prerequisite: Professional Program in Education.

320A-B-C-D-E-F Supervised Teaching in the Secondary School: Single Subject Instruction Credential (4-4-4-4-4-4-4-4) F, W, S. Full-time student teaching assignment for a semester's duration. Graded "IP" the first quarter, followed by a letter grade for all 20 units at the end of the second quarter. Prerequisite: Professional Program in Education.

330A-B-C-D-E-F-G-H-I Intern Teaching in the Secondary School: Single Subject Instruction (4-4-4-4-4-4-4-4) F, W, S. Must be a contract teacher with a school district and enrolled as a postbaccalaureate student at the University. Prerequisite: Professional Program in Education.

342A-B-C Supervised Field Experience: Learning Handicapped (4-4-4) F, W, S. Full-time student teaching assignment for a quarter's duration in appropriate special education setting. Includes weekly seminar.

344A-B-C Supervised Field Experience: Severely Handicapped (4-4-4) F, W, S. Full-time student teaching assignment for a quarter's duration in appropriate program with severely handicapped students. Includes weekly seminar.

350 Supervision of Classroom Teaching (4) Summer. Lecture-laboratory. Role of the supervisor in advancing teacher skills in guidance of the classroom learning process; skills in supervision. Prerequisite: admission to Administrative Services Credential Program.

351 Consultation, Coordination, and Collaboration Skills for the Resource Specialist (4) S. Development of consultative strategies and services, assessment techniques, problem-solving skills; correlation of curriculum, materials, and schedules; activities of special education and the regular classroom, develop ability to work with school assessment team processes. Includes 10 hours of field experience. Must have basic teaching credential and Special Education credential and have taught for a minimum of two years.

353 Techniques of Personnel Administration (4) S, Summer. Theories, principles, policies, and practices relative to personnel management, including current research, affirmative action, professional negotiations, conflict resolution, working conditions, employment contracts, recruitment, selection, assignment, reduction in force, dismissal, supervision, and evaluation. Prerequisite: admission to Administrative Services Credential program and completion of 36 postbaccalaureate units and teaching credential.

354 Governance, Organization, and Administration of Public Schools (4) F, Summer. Political, social, and economic forces affecting public school systems. Concepts of authority, power, and influence. Federal, State, and County mandates and policies, funding requirements, court decisions and other influences, including school boards, administrators, unions, professional organizations and pressure groups. Prerequisite: admission to Administrative Services Credential program and completion of 36 postbaccalaureate units and teaching credentials.

355 School Management in a Community Setting (4) W, Summer. School management, problem solving, decision making. Role of staff, community (including minorities) in assessing needs, establishing and implementing goals. Management of support systems, internal and external communications. Application of information technology. Conflict resolution, stress management, school site councils, community relations. Prerequisite: admission to Administrative Services Credential program and completion of 36 postbaccalaureate units and teaching credential.

370A-B-C Supervised Teaching in Bilingual Education, Elementary (4-4-4) F, W, S. Full-time student teaching assignment for a quarter's duration (or equivalent). Prerequisites: Education 300A-B-C; postbaccalaureate students only.

379 U.S. Government for Teachers (4) W, Summer. Covers teaching about the background of American democracy, the Declaration of Independence, and the U.S. Constitution — its amendments and its operation. Structure of local, state, and U.S. government. Fulfills State requirement for teaching credentials.

380 Health Education for Teachers (4) F, W, S, Summer. State requirements for teachers in the area of health education. Includes drug use and misuse, alcohol, tobacco, nutrition, health care systems, life cycle study, "wellness," and consumer education in health.

390 Curriculum Design and Management in Public Schools (4) S. Historical and contemporary principles for curriculum development. Basis for making curriculum decision; theories, principles, and operational techniques for curriculum planning. Human growth and development. Strategies and development of educational programs, including mandated programs, multicultural and socioeconomic considerations, evaluation, and staff development.

391 Educational Leadership (4) F. Theories of leadership, organizational behavior, communications, and shared decision making. Requirements for success in planning, managing, developing, and evaluating educational programs. Role of the leader in group contexts. Development of a positive school climate. Prerequisite: admission to Administrative Services Credential Program and completion of 36 postbaccalaureate units and teaching credential.

392 Accountability and Finance in Public Education (4). Economics, politics, and principles of school finance. Historical development, legal requirements, current issues. Sources and basis of revenue. Financial planning, budgeting, expenditure programs, purchasing, maintenance and operations, contracts, district and site level funding. Other functions associated with business management. Prerequisite: admission to Administrative Services Credential program and completion of 36 postbaccalaureate units and teaching credential.

397A-B Supervised and Administrative Field Work (4-4) F, W, S. A field experience in administration or supervision in the public school. The school district, student, and UCI jointly plan the work experience, its supervision, and accompanying academic work. Prerequisite: two years of teaching experience.

397D-E-F Professional Field Experience (4-4-4) F, W, S. Theory and practice in a school setting under the supervision of a practicing school administrator. Opportunity to apply and refine knowledge and skills in areas of primary interest or need in the educational domains specified for this credential. Prerequisite: Preliminary Administrative Services Credential.

399 Individual Study (1 to 4) F, W, S, Summer. Intensified advanced study in required areas of Administrative Services Credential program. Educational research seminars will be included. Restricted to students in advanced credential programs, e.g., Administrative Services.

College of Medicine

Walter L. Henry, M.D., **Dean**

118 Medical Surge I

Admissions: (714) 856-5388

Faculty

David Abrahamson, M.B., Ch.B. University of Witwatersrand (South Africa), *Clinical Instructor of Medicine*
 Bruce M. Achauer, M.D. Baylor College of Medicine, *Associate Adjunct Professor of Surgery (Plastic)*
 Theresa A. Adams, M.D. Pennsylvania State University, *Assistant Clinical Professor of Anesthesiology*
 Phyllis F. Agran, M.D. University of California, Irvine, and M.P.H. Harvard University, *Associate Professor of Pediatrics*
 Chang-Beom Ahn, Ph.D. Korea Advanced Institute of Science, *Assistant Adjunct Professor of Radiological Sciences*
 Abdelmajid Aissi, Ph.D. Georgia Institute of Technology, *Assistant Adjunct Professor of Radiological Sciences*
 Byron J. Allen, M.D. University of California, Los Angeles, *Assistant Adjunct Professor of Medicine (Cardiology)*
 Navinchandra M. Amin, M.B., B.S. Grant Medical Center, Bombay (India), *Adjunct Professor of Family Medicine*
 Anne-Line J. Anderson, M.S. University of Southern California, *Associate Clinical Professor of Radiological Sciences*
 Cynthia T. Anderson, M.D. University of Tennessee, *Associate Clinical Professor of Anesthesiology*
 Terek M. Anderson, M.D. Aim-Shams University Medical School (Cairo), *Clinical Instructor of Pediatrics*
 Brian S. Andrews, M.B., B.S. University of Sydney (Australia), *Professor of Medicine (Rheumatology) and of Biological Chemistry*
 Hoda Anton-Culver, Ph.D. St. Andrews University (Scotland), *Associate Professor of Medicine (Epidemiology and Preventive Medicine) and of Social Ecology*
 Sanford Anzel, M.D. New York Medical College, *Clinical Professor of Surgery (Orthopedics)*
 Stuart M. Arfin, Ph.D. Albert Einstein College of Medicine, *Professor of Biological Chemistry and Biological Sciences*
 Steven A. Armentrout, M.D. University of Chicago, *Professor of Medicine (Hematology)*
 Edward R. Arquilla, M.D., Ph.D. Case Western Reserve University School of Medicine, *Professor of Pathology*
 Ricardo H. Asch, M.D. University of Buenos Aires (Argentina), *Professor of Obstetrics and Gynecology in Residence (Reproductive Endocrinology and Infertility)*
 Rajkumari V. Asrani, M.B., B.S. Madras Medical College (India), *Associate Clinical Professor of Anesthesiology, and Obstetrics and Gynecology*
 Tamerou Asrat, M.D. University of California, Irvine, *Assistant Professor of Obstetrics and Gynecology in Residence*
 Joshua Atiba, M.B., B.S. University of Lagos (Nigeria), *Assistant Professor in Residence (Oncology)*
 Robert A. Baird, M.D. State University of New York, *Associate Adjunct Professor of Surgery (Orthopedics)*
 Kenneth M. Baldwin, Ph.D. University of Iowa, *Senior Associate Dean, College of Medicine, and Professor of Physiology and Biophysics, Biological Sciences, and Community and Environmental Medicine*
 Jose P. Balmaceda, M.D. Catholic University Medical School (Chile), *Associate Professor of Obstetrics and Gynecology in Residence (Reproductive Endocrinology and Infertility)*
 James L. Banks, M.D. Eastern Virginia Medical College, *Assistant Adjunct Professor of Pediatrics (Neonatology)*
 Michael E. Barish, Ph.D. Stanford University, *Assistant Adjunct Professor of Physiology*
 Steven J. Barker, M.D. University of Miami, and Ph.D. California Institute of Technology, *Associate Professor of Anesthesiology*
 Ronald J. Barr, M.D. Johns Hopkins Medical School, *Professor of Dermatology*
 Michael R. Barsotti, M.D. St. Louis University School of Medicine, *Clinical Instructor of Pediatrics*
 Cyril H. Barton, M.D. University of Colorado Medical School, *Associate Professor of Medicine (Nephrology-Renal)*
 Raymond T. Bartus, Ph.D. University of North Carolina, *Adjunct Professor of Neurology and Anatomy*

Darla H. Bejnar, M.D. Baylor College of Medicine, *Assistant Clinical Professor of Family Medicine*
 James D. Belluzzi, Ph.D. University of Chicago, *Associate Adjunct Professor of Pharmacology*
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 Alfred E. Bent, M.D. Dalhousie University (Nova Scotia, Canada), *Assistant Professor of Obstetrics and Gynecology in Residence (Gynecologic Urology)*
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 J. Edward Berk, M.D. Jefferson Medical College, D.Sc. University of Pennsylvania, *Professor Emeritus of Medicine (Gastroenterology)*
 Michael L. Berman, M.D. George Washington School of Medicine, *Associate Professor of Obstetrics and Gynecology (Oncology) and of Community and Environmental Medicine*
 Monique A. Berman, Ph.D. Upstate Medical Center, State University of New York, *Associate Adjunct Professor of Medicine (Rheumatology)*
 Michael W. Berns, Ph.D. Cornell University, *Professor of Surgery, Cell Biology, Ophthalmology, Radiology, and Arnold and Mabel Beckman Chair in Laser Biomedicine*
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 Richard B. Berry, M.D. University of Florida, *Assistant Professor of Medicine (Pulmonary) in Residence*
 Mary Beth Bewersdorf, M.D. Creighton University, *Assistant Clinical Professor of Anesthesiology*
 Deepak K. Bhalla, Ph.D. Howard University, *Associate Professor of Community and Environmental Medicine in Residence*
 Arnold Binder, Ph.D. Stanford University, *Professor of Social Ecology and Psychiatry and Human Behavior*
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 Marianne E. Bronner-Fraser, Ph.D. The Johns Hopkins University, *Professor of Physiology and Biophysics and Biological Sciences*
 Steven Brostoff, Ph.D. Massachusetts Institute of Technology, *Adjunct Professor of Neurology*
 Monte S. Buchsbaum, M.D. University of California, San Francisco, *Professor of Psychiatry and Human Behavior*
 William E. Bunney, Jr., M.D. University of Pennsylvania, *Department Chair and UCI Distinguished Professor of Psychiatry and Human Behavior, and Professor of Pharmacology and Psychobiology*
 Michael J. Burns, M.D. University of California, Irvine, *Associate Clinical Professor of Medicine (Emergency Medicine)*
 Michael D. Cahalan, Ph.D. University of Washington, *Professor of Physiology and Biophysics and Biological Sciences*



The UCI College of Medicine offers one of the largest residency training programs in primary care and internal medicine in the United States; and its clinical programs in burns, cancer, diabetes, heart disease, psychiatry, obstetrics, infectious disease, perinatology, and trauma are recognized across the country.

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- Justin D. Call, M.D. University of Utah College of Medicine, *Professor of Psychiatry and Human Behavior*
- Rolando Castillo, M.A. Goddard College, *Assistant Clinical Professor of Medicine (General Internal Medicine and Primary Care)*
- Thomas C. Cesario, M.D. University of Wisconsin Medical School, *Professor of Medicine (Infectious Disease)*
- Barry F. Chaitin, M.D. New York University, *Associate Clinical Professor of Psychiatry*
- K. George Chandy, M.D. University of California, Irvine, *Assistant Professor of Medicine (Allergy) and Physiology and Biophysics*
- Julia A. Chapman, M.D. University of California, Irvine, *Clinical Instructor of Obstetrics and Gynecology (Oncology)*
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- Lido Chen, M.D. National Taiwan University, M.P.H. University of California, Los Angeles, *Associate Clinical Professor of Anesthesiology*
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- Michael Cohen, Ph.D. Bowling Green State University, *Adjunct Professor of Psychiatry*
- Gary W. Cole, M.D. University of California, Los Angeles, *Associate Adjunct Professor of Dermatology*
- Martin Colman, M.B., Ch.B., M.M.Ed. (Rad. T.), D.M.R.T. University of Witwatersrand (South Africa), *Chief of Radiation Oncology and Associate Professor of Radiological Sciences and Obstetrics and Gynecology*
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- T. Timothy Crocker, M.D. University of California, San Francisco, *Professor Emeritus of Community and Environmental Medicine and Social Ecology*
- Roger L. Crumley, M.D. University of Iowa, *Chief of Otolaryngology and Professor of Surgery (Otolaryngology)*
- B. Dwight Culver, M.D. Stanford University School of Medicine, *Clinical Professor of Medicine*
- Dennis D. Cunningham, Ph.D. University of Chicago, *Chair and Professor of Microbiology and Molecular Genetics, and Professor of Biological Sciences and of Biological Chemistry*
- M. Douglas Cunningham, M.D. University of Cincinnati, *Professor of Clinical Pediatrics and Biological Chemistry*
- William G. Cvetnic, M.D. University of Pittsburgh, *Assistant Adjunct Professor of Pediatrics (Neonatology)*
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- Mark I. Zetin, M.D. University of California, Irvine, *Associate Adjunct Professor of Psychiatry and Human Behavior*
- Susan E. Ziemba, M.D. University of California, Davis, *Assistant Clinical Professor of Medicine (Internal Medicine)*

The UCI College 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. The College is dedicated to advancing the knowledge and practice of medicine for the benefit of society. This mission is being achieved through the accomplishment of the following complementary and synergistic objectives:

Scholarly research of the highest quality to further the understanding of human biology and the diagnosis, treatment, and prevention of disease.

Education of physicians who meet the highest standards of professional competence and achievement.

Development of scholars in the clinical and basic sciences who will assume leadership roles in medical practice, education, and research.

Provision of high-quality medical care to patients through the UCI Clinical Services System that will serve as a model of excellence.

Dissemination of the results of advances in medical research and practice.

Health Sciences Complex

The medical school facilities comprise a 121-acre site which has been designated the Health Sciences Complex. Twenty-nine acres have been developed to provide space for teaching, research, and patient care as well as offices for departmental administration.

The College'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, offices and laboratories for various basic and clinical departments, and a student center. Other buildings house the College's administration, laboratories, and the Biomedical Sciences Library.

Faculty from the Departments of Pharmacology, Biological Chemistry, and Psychiatry and Human Behavior, and the University of California Irvine Occupational Health Center share laboratory space with corporate researchers in a building adjacent to the College.

In addition, the 40,000-square-foot Hitachi Chemical Research Center, which was completed in spring 1990, is devoted to basic research in the fields of neurological disorders, diagnostic systems and reagents, and industrial bioreactors.

Comprehensive outpatient services are available on campus through the UCI Medical Plaza and the Beckman Laser Institute and Medical Clinic. Housing one of the world's leading programs in medical laser technology, the Beckman Laser Clinic offers state-of-the-art treatment for cancer of the head, neck, and female reproductive system and for cardiovascular disease.

The UCI Medical Plaza capitalizes upon the broad range of diagnostic and therapeutic programs of the College as well as the extensive clinical expertise of the faculty. The facility offers services in a variety of specialties, including internal medicine, obstetrics and gynecology, pediatrics, dermatology, ophthalmology, cardiology, orthopedics, gastroenterology, and neurology. Special programs in diabetes, multiple sclerosis, and inflammatory bowel diseases also are available. Also located in the Plaza is the Lon V. Smith Eye Clinic, which offers the latest in diagnostic health care for eye diseases, including computerized refraction analysis, glaucoma diagnosis, and ultrasound analysis of eye disorders.



UCI Community Clinics provide training programs for medical students and residents and provide care for 55,000 outpatient visits annually.

Clinical Services System

Medical services offered by the College are provided through the UCI Clinical Services System. This System comprises the UCI Medical Center in Orange, one community clinic in Santa Ana, another clinic in Anaheim, and numerous affiliated hospitals and clinics located in Orange, Los Angeles, San Bernardino, and Kern Counties. It incorporates the talents and medical expertise of more than 450 full-time clinical faculty of the College as well as approximately 1,800 community physicians who serve as voluntary faculty.

The purposes of the UCI Clinical Services System are to serve the community and to maintain an environment of excellence in medical education and research. At the UCI Medical Center the College offers students and residents a full range of clinical education and research activities, from primary care to the most technical subspecialties. The community clinics offer primary, continuity-of-care medicine, and the College's affiliated hospitals and clinics round out the educational program. Together, these facilities offer opportunities for clinical training in specific specialties and exposure to a wide range of patient populations for more than 600 resident physicians, 184 third- and fourth-year medical students, and numerous allied health and nursing students.

As major providers of medical care, the institutions of the UCI Clinical Services System play a critical role in meeting the health care needs of four Southern California counties. The College has one of the largest training programs for primary care physicians in the United States, and its clinical programs in burns, cancer, diabetes, heart disease, psychiatry, obstetrics, infectious disease, perinatology, and trauma are recognized across the country.

UCI Medical Center

The University of California Irvine Medical Center, located in the City of Orange, is a 493-bed, comprehensive medical care center. It is the principal clinical facility of the College of Medicine operated by the University. The medical faculty of the College of Medicine, together with the medical resident-physician staff, provide the professional care. Services are provided in medicine, surgery, obstetrics and gynecology, pediatrics, psychiatry, family medicine, dermatology, pathology, radiology, physical medicine and rehabilitation, ophthalmology, neurology, and anesthesiology. The UCI Medical Center also has cardiac, pediatric, neonatal, respiratory, burn, and medical-surgical intensive care units, and more than 90 specialty outpatient clinics. It is the designated countywide Level I tertiary trauma referral center.

A major capital improvement program at the UCI Medical Center includes the construction of new intensive care units for medical, surgical, and cardiac patients. In addition, the lobby, pathology laboratories, and general medical floors are being upgraded. The construction of a 92-bed psychiatric hospital to replace the existing psychiatric facility also is underway. The UCI Medical Pavilion, a companion facility to the UCI Medical Plaza on campus, houses multispecialty care facilities. It is also the interim site for the UCI Clinical Cancer Center while construction progresses on a 56,000-square foot facility for comprehensive outpatient cancer care. Upon completion in 1991, the center will encompass all of the basic and clinical subspecialties involved in adult and pediatric oncology, including specialized medical, nursing, and ancillary care necessary to diagnose and manage patients with cancer.

UCI-Community Clinic of Orange County

The Community Clinic of Orange County (CCOC) is located in the City of Santa Ana and is the home of the Refugee Preventive Health Service Program and the Urban Health Initiative Program which are overseen by the Department of Family Medicine. CCOC provides training for medical students in their primary care rotations as well as for first-, second-, and third-year Family Medicine residents. CCOC provides care for approximately 35,000 outpatient visits annually.

UCI-North Orange County Community Clinic

The North Orange County Community Clinic (NOCCC) is located in the City of Anaheim and provides 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 a multispecialty faculty practice. NOCCC provides training for medical students in their primary care, general pediatric, adolescent medicine, and geriatric medicine rotations and electives. The Clinic provides care for more than 20,000 outpatient visits annually.

Affiliated Hospitals and Clinics

Additional major teaching and research programs of the College of Medicine are conducted at the Veterans Administration Medical Center, Long Beach, and at Memorial Medical Center (Long Beach). Other academic programs are conducted in affiliation with San Bernardino County Medical Center, Fairview Developmental Center (Costa Mesa), Kaiser Foundation Hospital (Bellflower and Canyon General), Childrens Hospital of Los Angeles, Childrens Hospital of Orange County, Metropolitan State Hospital (Norwalk), St. Joseph Hospital (Orange), St. Jude Hospital and Rehabilitation Center (Yorba Linda), The City of Hope Medical Center (Duarte), Rancho Los Amigos Hospital (Downey), Capistrano by the Sea Hospital (San Juan Capistrano),

Western Medical Center (Tustin), the Kern Medical Center (Bakersfield), Clínica Sierra Vista (Lamont), Hoag Memorial Hospital Presbyterian (Newport Beach), Lanterman Developmental Center (Pomona), and the Orange County Department of Education (Costa Mesa).

Admission to the M.D. Program

The College of Medicine is a member of the American Medical College Application Service (AMCAS). All students who seek entrance to medical school must first apply to AMCAS. Requests for applications should be submitted directly to:

The American Medical College Application Service
1776 Massachusetts Avenue, N.W., Suite 301
Washington, D.C. 20036

Applications may be submitted between June 15 and November 1 of the year preceding anticipated admission. Students who wish to apply to the College of Medicine should designate it on their AMCAS application form, and AMCAS will forward the application to the College.

Last year, the College received approximately 3,300 applications from AMCAS. From these, some 500 candidates were granted interviews, and 92 students were enrolled in the first-year class beginning in September.

Applications received by the College are reviewed by an Admissions Committee composed of basic science and clinical faculty, medical students, and members of the local community.

After initial screening, selected applicants are requested to submit additional materials which include letters of recommendation, supplemental information forms, two photographs, and a nonrefundable application fee of \$40. Additional information should not be submitted unless requested.

In addition to scholastic achievement, attributes deemed desirable in prospective students include indications of leadership ability and participation in extracurricular activities (e.g., research and medically related experiences as well as community involvement). Utilizing the AMCAS application and the letters of recommendation, the Admissions Committee looks for qualities considered valuable in a physician. These qualities include the intellectual and emotional capacity to provide comprehensive and continuing medical care, the ability to cope with disease and guide patients through the complex array of medical services, the commitment to remain sensitive to individual needs, and the dedication to strive for the advancement of the art, science, and practice of medicine long after obtaining a medical degree.

Applicants may expect to receive notification about their admission status from the College any time from October until the beginning of the following fall term. The Admissions Committee maintains a list of alternative candidates for possible acceptance should a vacancy occur before the end of the first week of classes. Accepted applicants must return a written statement of their acceptance of the College's offer within two weeks after receipt of the notice of acceptance. No advance deposit to hold a position in the class is required of applicants. Students who are accepted sign a Statement of Intent to Register, but (in keeping with the recommendations of the Association of American Medical Colleges) are free to withdraw prior to enrollment if their medical school or career choice changes.

Because the University of California is a State-assisted institution, preference is given to California residents who are U.S. citizens or permanent residents of the United States. The College does, however, participate in the student exchange program of the Western Interstate Commission for Higher Education (WICHE). Under this program, qualified legal residents of certain Western states without medical schools (Alaska, Idaho, Montana, and Wyoming) are considered along with California residents. The states of origin reimburse the State of California for the educational costs of students who are accepted.

To be eligible for this program, students must apply to WICHE certifying officers in their own states. For addresses of certifying officers, write to:

Western Interstate Commission for Higher Education
P.O. Drawer P
Boulder, CO 80302

Requirements for Admission

First-year students may enter only in September of each year. Students can be considered for admission to the College of Medicine if they meet the following requirements:

1. Completion of a minimum of three full years of undergraduate work with a superior scholarship record. This work must total not less than 90 semester units or an equivalent number of quarter units that are acceptable for a bachelor's degree credit in an accredited institution of higher education. 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 scholarship 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 College of Medicine is contingent upon evidence of satisfactory completion of all requirements and all courses listed as "in progress" on the AMCAS application. Failure to meet requirements or falsification of information are grounds for rejection or dismissal.
2. Completion of the following college course requirements prior to matriculation:

	Semester Units	Quarter Units
One year of general chemistry	8	12
One year of organic chemistry	8	12
One year of physics	8	12
One and one-half years of	12	18
biology and/or zoology		
(NOTE: these courses must include one year		
of lower-division biology and/or zoology plus		
a half year of upper-division courses		
excluding botany and biochemistry)		
One quarter of college level	2.7	4
calculus		

Premedical students are advised to take advantage of the intellectual maturation afforded by a well-rounded liberal arts education. The study of English, the humanities, and the social and behavioral sciences are considered particularly important. The following courses are also recommended but not required: genetics, vertebrate embryology, physical chemistry, and Spanish.

3. Candidates must attain satisfactory scores on the New Medical College Admission Test (MCAT). An officially certified test score taken in the spring or fall of 1991 must be received by the College's Admissions Office before the candidate's application can be considered. The College of Medicine will

not consider applications for admission to the 1992 entering class with MCAT test scores taken prior to the admission of the new MCAT in 1991. Inquiries regarding the MCAT should be addressed to:

The New Medical College Admissions Test
The American College Testing Program
P.O. Box 414
Iowa City, IA 52243

Medical Student Advising Personnel	Area Code (714)
<i>Basic Science Faculty Advisors</i>	
Robert Blanks, Associate Professor of Anatomy and Neurobiology, Surgery, and Biological Sciences	B106 MS I 856-5984
Hoda Anton-Culver, Associate Professor of Community and Environmental Medicine	369 MSR II 856-7416
Kenneth H. Ibsen, Associate Professor of Biological Chemistry and Biological Sciences	D-251 MS I 856-6756
Frances M. Leslie, Associate Professor of Pharmacology	306 MSR II 856-6699
Ellena Peterson, Assistant Professor of Pathology in Residence	D-440 MS I 856-7450
Ralph E. Purdy, Associate Professor of Pharmacology	350C MSR II 856-7433

Clinical Faculty Advisors

To be assigned during the second year in order to assist with issues of the third and fourth years of medical school.

Student and Curricular Affairs Advisors

J. Hutchison Williams, M.D., Associate Dean	125 MSRI	856-6197
Kenneth H. Ibsen, Ph.D., Assistant Dean	125 MSRI	856-6198
Laurel Bartenstein, Director, Curricular Affairs	E-120 MS I	856-5282
Burt Winer, Counselor and Director of Student Development	E-108 MS I	856-5076
Eileen Muñoz, Coordinator, Summer Programs	E-108 MS I	856-4603
Elizabeth Parker, Director, Office of Admissions	E-112 MS I	856-4618
Susan Canett, Director, Office of Educational and Community Programs	E-108 MS I	856-4603
James Miles, Assistant Director, Financial Aid Coordinator	125 MSR	856-4605
Penny Utley, Student Affairs Officer, UCIMC	Bldg. 22A UCIMC	634-5176

Medical Scientist Program

Exceptionally well-qualified students interested in careers in academic medicine and with demonstrated research accomplishments may be considered for admission to the Medical Scientist Program. Students in this program pursue a combined curriculum leading to an M.D. degree from the College of Medicine and a Ph.D. degree from the School of Biological Sciences. A minimum of seven years is required to complete the Program. Students holding either degree are not eligible for the Program. Additional information is available from the Medical Scientist Program Coordinator's Office, (714) 856-5264.

Applicants for this program must submit separate applications to both the College of Medicine and the Medical Scientist Program. The separate application forms can be requested from the Office

of Admissions, College of Medicine. If accepted into the program, students will be expected to choose a specific graduate department before the start of the academic year in which they enter the program. Applicants may also write to the department they wish to join for graduate admission requirements. Financial support in the form of a fellowship, which includes a stipend as well as tuition and fees, is available to a limited number of students. Applicants not accepted into the Medical Scientist Program may be considered separately for admission to the College of Medicine.

Admission to Advanced Standing

Currently there are no positions available in the advanced standing/transfer program. For further information, students should contact the College's Admissions Office.

Admissions Information

All inquiries regarding admissions programs and procedures of the College of Medicine should be directed to:

Office of Admissions
E112 Medical Sciences I Building
College of Medicine
University of California
Irvine, CA 92717
(714) 856-5388

The M.D. Curriculum

The M.D. curriculum requires four years to complete. If special needs are identified, the time may be extended to five years.

The first and second years are scheduled on a modified quarter system. There is a 10-week vacation period between the first and second years; students may use that time for elective or research work in place of vacation. Between the second and third years is a five-week vacation, during which the National Board Examination Part I will be administered. In the fourth year up to 11 weeks of vacation are allowed.

The first year includes gross anatomy and embryology, nutrition, histology, biochemistry, physiology, neuroanatomy, behavioral sciences I, and microbiology. The second year includes pathology, clinical pathology, pharmacology, behavioral sciences II, examination of the patient, preventive medicine, studies of the mechanisms of disease, and an introduction to the clerkships.

The third and fourth years are spent in clerkships in medicine, pediatrics, obstetrics and gynecology, surgery, anesthesiology, ophthalmology, psychiatry and human behavior, physical medicine and rehabilitation, neurosciences, primary care, and radiology. Students are also provided ample opportunity to participate in clinical and research elective courses of their choosing.

To satisfy the requirements for the M.D. degree, each medical student must successfully complete the full curriculum (basic science, preclinical, clinical, and elective course work) with at least a 2.0 grade point average, and fulfill the National Board Examination requirement. After the second year, all students are required to pass Part I of the National Board Examination before continuing their clinical clerkships. Students must also pass Part II of the Boards prior to graduation. In accordance with National Board Examination rules, the examination may be taken a maximum of three times.

Curricular Policies

The curricular policies of the College of Medicine are the responsibility of faculty committees. A listing of these policies is contained in the *Medical Student Handbook*, which is available

from the Office of Student and Curricular Affairs and is distributed along with other policy statements to all students upon matriculation.

The grading system at the College utilizes letter grades A through F.

Further Information

Further information regarding registration, rules and regulations, grading procedures, requirements for academic advancement, and other facts is provided in the *Medical Student Handbook*, which is given by the Office of Curricular Affairs to all students upon matriculation to the College.

The *UCI College of Medicine Announcement* contains general administrative and academic information as well as descriptions of the medical curriculum. The *Announcement* can be purchased for \$4. Checks should be made payable to "UC Regents," and requests should be sent to:

Office of Admissions
E112 Medical Sciences I Building
College of Medicine
University of California
Irvine, CA 92717
(714) 856-5388

Curricular Description

First Year: Basic Sciences

No more than six hours of instruction are scheduled per day; of these six hours, no more than four are formal lectures.

Gross Anatomy, Embryology, Histology, and Neuroanatomy

The language of medicine is taught in human gross anatomy, embryology, histology, and human neuroanatomy. Gross anatomy is taught through a regional approach with emphasis on laboratory dissection augmented by lectures, demonstrations (radiographic films), teaching aids, and clinical correlate material. It includes a detailed consideration of the embryology of human development. Histology is designed to provide students with knowledge of subcellular and cellular morphology and function in preparation for studies in pathology. Organizational principles regarding how cells are combined to form tissue and how tissues combine to form organs provide a basis for studies of normal function and pathological disturbances. Neuroanatomy is experimentally and clinically oriented and consists of laboratory and lecture material, along with clinical discussions. The course emphasizes the structure of nerve cells, the organization and function of the central and peripheral nervous systems, and insights into related diseases of the human nervous system. Courses are open only to medical students and graduate students required to take any or all of these courses.

Biochemistry

Students may choose between two courses in biochemistry. One course provides a general overview of classical biochemistry and molecular biology, including the structure and function of proteins, enzymology, metabolic pathways and their regulation, protein biosynthesis, and the molecular mechanisms responsible for regulation at the transcriptional and translational levels. The other course is taught in a problem-solving mode and is designed for more advanced students. It covers molecular genetics, including gene structure and function, as well as molecular and cellular biology. In addition, students from both courses attend lectures concerning the principles of human genetics and aspects of physiological chemistry, such as mechanisms of blood clotting. A clinical correlate is held each week and all students give a seminar presentation.

Behavioral Sciences I

The curriculum is designed to help the student learn the behavioral aspects of medicine as they apply to general medical and surgical practice. Behavioral Sciences I covers normal human development, the basics of the doctor-patient relationship, basic interviewing techniques, and behavioral neurochemistry. It includes readings, lectures, and small group discussions.

Nutrition

Nutrition is studied as it relates to clinical practice. The curriculum covers a broad overview of the nutritional aspects of disease prevention and health promotion as well as nutritional support in a variety of disease states.

Physiology

The course consists of lecture, special topic and review sessions, and audiovisual presentations of the classical concepts of vertebrate physiology, with emphasis on the function of normal tissues in humans. Specific topics related to neurological, cardiovascular, respiratory, renal, gastrointestinal, endocrine, exercise, and temperature regulation are presented.

Microbiology

This course deals with the biochemical and genetic properties of infectious agents, activities of toxins, chemotherapy, and the biochemistry and genetics of antibiotic resistance. A considerable portion of the course deals with the humoral and cellular basis of immunity and the genetic control of the immune response. The course also includes an in-depth study of the biology of parasites and the structure and activity of viruses.

First and Second Years:

Basic Science and Preclinical Course Work

First Year	Hours	Second Year	Hours
Gross Anatomy and Embryology	200	Pathology	172
Biochemistry	168	Clinical Pathology	56
Histology	70	Pharmacology	140
Neuroanatomy	90	Behavioral Science II	60
Physiology	200	Preventative Medicine	80
Microbiology	200	Examination of the Patient	78
Behavioral Science I	30	Mechanisms of Disease	130
Nutrition	20	Introduction to the Clerkships	122

Third and Fourth Years:

Clinical Clerkships and Electives*

Clerkship Rotations		Electives and Core Clerkships	
Third Year	Weeks	Fourth Year	Weeks
Pediatrics	10	Radiology	3
Obstetrics and Gynecology	10	Neurosciences	4
Psychiatry	8	Ophthalmology	1
Physical Medicine and Rehabilitation	2	Anesthesiology	1
Junior Medicine	10	Senior Medicine	5
Surgery	10	Surgical Subspecialties	2
Primary Care	5 **	Surgically Related Electives	3
		Medically Related Electives	5
		Nondesignated Electives	16

*The sequence of the third and fourth years varies; student rotation is assigned by lottery.

**One-half day per week for 50 weeks.

Second Year: Preclinical Sciences

No more than seven hours of instruction will be scheduled each day, and of these no more than four are formal lectures.

Pharmacology

This course deals with drugs of various classifications which are used for specific or symptomatic therapies of disease states. Emphasis is on the mechanisms of action of drugs at the organ or system level and on their use in medical therapy. The course includes lectures that illustrate pharmacologic principles, supplemented by small group problem-solving sessions.

Pathology

This course is concerned with the etiology, pathogenesis, and diagnosis of disease from the following perspectives: molecular, cellular, tissue, organ, and clinical. Morphologic changes are particularly studied utilizing electron microscopy, histopathology, histochemistry, immunohistochemistry, and gross pathology. After a general introduction, specific organ systems and disease entities are studied in detail. Clinical-pathologic, molecular-pathologic, and pathophysiologic correlations also are primary considerations.

Clinical Pathology

This course consists of lectures and laboratories covering the areas of hematology, blood bank, clinical chemistry, and microbiology.

Examination of the Patient

Instruction and experience are offered in the elements of physical diagnosis, patient interviews, history, and physical examination. The student works closely with clinical preceptors who supervise direct contact with patients. Instruction is also provided in small group format for patient examinations in the specialty areas of psychiatry, neurology, pediatrics, orthopedics, general surgery, ENT, and ophthalmology.

Behavioral Sciences II

Behavioral Sciences II focuses primarily on psychopathology and substance abuse. The course consists of readings, lectures, and small group discussions. Students also are exposed to patients and learn the dynamics of the patient interview. In Behavioral Sciences I, the emphasis is on interviewing "normal" people; in Behavioral Sciences II the student is introduced to how to assess pathology.

Preventive Medicine

This course consists of five parts: biostatistics, toxicology, epidemiology, occupational medicine, and health administration. It provides a background for the critical review and understanding of principles of prevention of disease. The biostatistics portion emphasizes statistical analysis of epidemiologically based studies. The epidemiology section includes a laboratory and discussion of examples of the important types of epidemiological studies and the basis for their evaluation. Principles of health administration at all levels of community organization are provided. A background into the principles of toxicology and occupational and environmental medicine are provided in the context of disease causation and prevention.

Mechanisms of Disease

A clinical care approach is used to focus on diagnosis and pathophysiology of disease.

Introduction to the Clerkships

This course combines information from several departments to familiarize the student with the clinical experience. It is a major link in the student's transition from basic science courses to the clinical clerkships.

Following this course students will be prepared to commence practical work and begin their clinical clerkships.

Third and Fourth Years: Clinical Sciences

The clinical experience is composed of (a) core clerkship rotations, with a specific allotment of time in each department and (b) electives. Sequencing of clerkships is determined by a student lottery conducted by the Office of Student and Curricular Affairs.

Clerkships

Anesthesiology

During the one-week required core clerkship, students spend time observing the anesthetic management of patients in the operating room. They are instructed in the basic principles of airway management, preoperative evaluation of patients, and pharmacology of routine anesthetic and basic resuscitative drugs.

A four-week, fourth year elective is offered at UCIMC and the Veteran's Administration Medical Center, Long Beach (VAM-CLB). Students participate in supervised hands-on patient care in the operating room and gain familiarity with the technical aspects of anesthesia. In addition, students are expected to attend weekly lectures and clinical conferences which are devoted to presentations and discussions of interesting cases and complications.

A four-week rotation through the VAMCLB Surgical Intensive Care Unit and an eight-week research rotation also are offered.

Junior Medicine

Students are taught the appropriate diagnostic and therapeutic approach to commonly encountered medical illnesses. The intent is that, in addition to scientific aspects of medical diagnosis and therapy, students will develop an appreciation for the importance of psychosocial-economic factors in the care of the patient. Experience is provided with common medical procedures such as lumbar puncture, insertion of catheters, and thoracentesis. The student is expected to assume increasing responsibility for hospitalized patients and to develop an approach to patients' problems which includes references to the appropriate medical literature.

Senior Medicine

Students spend five 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.

Neurosciences

The clinical neurosciences clerkship emphasizes the development of student skills in neurological examination as well as the medical and surgical management of patients with brain, nerve, and muscle disease.

Obstetrics and Gynecology

During this clerkship, students are taught the scientific basis of gynecology and obstetrics, including reproductive physiology, anatomy, fetal physiology, and pathology. Practical experience is offered in the management of normal and abnormal pregnancy and delivery. Instruction is given in office and surgical gynecology. Students who have completed an introductory clerkship may then apply for an advanced elective that allows a progression of clinical responsibility both in operative obstetrics and office gynecology. This advanced period also may be devoted to an in-depth study of a subspecialty area such as gynecologic oncology, maternal-fetal medicine, reproductive endocrinology and infertility.

Ophthalmology

The core clerkship provides instruction in the basis of ophthalmoscopy, slit lamp examination, visual function testing, and management of emergency eye problems. Electives from one to four weeks may be taken in clinical suites, with exposure to ophthalmic surgery and emergency eye care.

Pediatrics

The pediatrics clerkship serves as an introduction to general pediatrics. Students rotate through the pediatric ward, the pediatric outpatient clinic, and the newborn nursery. During the clerkship, students are expected to refine their knowledge and skills in obtaining accurate historical data, performing physical examinations with pediatric patients, and developing appropriate diagnoses and management plans. Subspecialty clinics and community pediatric experiences also are included in the clerkship. The session also offers insight into the natural history of diseases associated with pediatric patients and stresses the relationship of the health of infants, children, and adolescents with regard to the integrity of the family unit.

Physical Medicine and Rehabilitation

During the physical medicine and rehabilitation rotation, students are assigned patients who are in an active rehabilitation program. Emphasis is placed on the rehabilitation of the total patient. The medical aspects of the patient's care are discussed in detail. Instruction is provided in the various physical techniques of rehabilitation and in the psychosocial factors which permanently affect this process.

Primary Care

This unique clerkship matches students with a primary care physician for the entire third year. Each student attends a UCI clinic or a private physician's office for a half day per week where the principles of primary care practice are taught. Each student becomes the primary care provider for a number of patients and continues to care for them throughout the clerkship.

Psychiatry

The six-week clinical clerkship provides an opportunity for hands-on experience in the process of learning human behavior as it relates to general medicine. The student elects two three-week clinical rotations participating fully in patient care, clinical teaching, and conferences. Choices include adult inpatient psychiatry, substance abuse, child psychiatry, consultation psychiatry, and emergency room psychiatry. A wide variety of clinical settings and patient populations is available. A required lecture series is presented on Tuesday afternoons at UCI Medical Center.

Radiology

Radiological sciences involves the diagnostic use of imaging and the therapeutic effect of radiation upon abnormal lesions in the body. Radiological sciences is taught throughout the four years of medical school: during the anatomy course in the first year, in the "Mechanisms of Disease" course the second year, as a required clerkship in the third year, and as an elective in the fourth year. The Department has specialists in all subspecialty areas of radiology (nuclear medicine, ultrasound, computerized tomography, magnetic resonance imaging, spectroscopy) and the general diagnostic areas of radiology (chest, bone, gastrointestinal, and genitourinary). There are daily clinical film conferences with staff and residents. The American College of Radiology film learning laboratory is available for student use. There are daily seminars interrelating general medicine, surgery, and radiology. Emphasis is given to the use of all forms of imaging for diagnosis and treatment including an understanding of the risk/benefit ratios involved and the clinical indications for various radiologic procedures.

Surgery

The surgical clerkship provides students an opportunity to study surgical patients in outpatient and hospital settings as members of the surgical team. Students acquire surgical knowledge, as well as develop skills in taking medical histories and conducting physical examinations. Emphasis is placed on the clinical evaluation, pathogenesis, diagnosis, and treatment of surgical diseases.

Surgical Specialties

The objective of the surgical specialties clerkship is to provide an opportunity for students to expand their skills and knowledge in the surgical field. Students are required to complete six weeks of surgical specialties including urology, plastic surgery, orthopedic surgery, and otolaryngology.

Electives

A total of 24 weeks in the medical curriculum are allotted for elective time. Sixteen of those weeks are nondesignated electives, and students, depending upon their particular interests, needs, and goals, may take a variety of elective courses consisting of at least 30 contact-hours per week beginning in the fourth year. In addition, five weeks are devoted to medically related electives which may include pediatrics or family medicine, and three weeks are devoted to surgically related electives which may include anesthesiology or obstetrics and gynecology.

Electives must be approved by the clinical faculty advisor and the department chair. Students may take up to 12 weeks of electives at institutions other than UCI.

A listing of elective courses and descriptions can be found in the *Elective Book*, which is available from the Office of Curricular Affairs (on campus), and the Office of Student and Curricular Affairs at the UCI Medical Center.

All questions regarding the curriculum, electives, or matters of records should be directed to:

Curricular Affairs Office
Medical Sciences I, Room E120
College of Medicine
University of California
Irvine, CA 92717
(714) 856-5282

Office of Student and Curricular Affairs

The Office of Student and Curricular Affairs provides the day-to-day link between medical students and the academic and administrative functions of the College. Student and Curricular Affairs has personnel located on the UCI campus and at the UCI Medical Center, and the Office is divided into seven units: Office of the Associate Dean, Student and Curricular Affairs (Clinical), Student Development, Medical Education, Admissions, Curricular Affairs, and Financial Aid.

Student and Curricular Affairs has two broad goals: the first of these is to support the academic mission of the College of Medicine by facilitating the admissions, record keeping, and financial aid processes and by providing academic support services to help students gain the most from their medical education. The second goal is to assist students in their personal and professional development by identifying and responding to issues and problems they encounter while pursuing their medical education. This is accomplished through student support services, student development workshops, and seminars.

Among the many student support services offered by the Office of Student and Curricular Affairs are:

- Academic Counseling
- Academic Monitoring
- Assignment of Faculty Advisors
- Big Brother-Big Sister Programs
- Cross-Cultural Medical Alliance Series
- Liaison with the UCI Affirmative Action Office
- Liaison with General Campus Support Services
- National Board Review Course
- Peer Counseling

- Personal Counseling
- Student Development Workshops
- Study Skills Workshops
- Support to Medical Student Organizations
- Tutoring

The student development and medical education workshops are designed to enhance personal and academic growth, addressing topics and curricular issues in medical education as well as workshops in stress management, interpersonal relations, conflict resolution, test anxiety, note-taking, and a variety of other medical school related subjects.

The newly established Office of Educational and Community Programs (OECF) was designed to meet the challenges of the changing demographics in California, and to contribute to the diversity in underrepresented students in medicine; Blacks/Afro-Americans, Chicano/Latinos, and Native Americans. OECF is responsible for the recruitment and success of the targeted populations and directions of several programs: Summer Premedical and Pre-Entry Programs, Postbaccalaureate Program, Minority Premedical Conference, Reapplicant Conference, support to medical student organizations, academic counseling, study skills workshops, and liaison with general campus support services.

In addition to providing general services to all students, the Office of Student and Curricular Affairs is responsive to the unique concerns of women, minority, disadvantaged, and nontraditional students. Such services include the following programs:

The Summer Pre-Entry Program introduces newly accepted minority and/or disadvantaged students to the type and volume of study materials they will encounter in medical school. The program is intended to help students adjust to the professional school setting, meet new classmates, become acquainted with the surrounding communities, and get situated with living accommodations. The rigorous, highly scheduled, six-week summer program is designed to prepare entering students to succeed in the regular medical school curriculum, which begins in September. On-campus housing during the regular academic year is provided to students who qualify according to Federal Health Careers Opportunity Program guidelines.

The Summer Premedical Program seeks to increase the number of minority and/or disadvantaged students who are accepted into medical school and who successfully complete their medical education. The program achieves this goal by providing participants with the special skills and prerequisites needed to become more competitive for entrance into a health professional school. The program is conducted on the UCI campus from early July to mid-August. Participants are provided with room and board paid by a grant from the Federal Health Careers Opportunity Program. Undergraduate students entering their second year in colleges and universities are encouraged to apply. Individuals who show a commitment to ultimately practicing in medically underserved areas are given highest priority.

The Postbaccalaureate Program is a one- to two-year program aimed at increasing the number of minority and/or disadvantaged students who are accepted into medical school by assisting individuals who have been unsuccessful in earlier attempts to gain admission. During Phase I of the program, which is conducted from July to September, students are offered an intense Medical College Admission Test (MCAT) preparation. Students review the science areas of the exam and receive training in reading, writing, and quantitative skills. Room and board are provided during this phase. During Phase II of the program, students are enrolled in undergraduate courses that supplement and review the premedical science requirements. They also have the opportunity to participate in research projects with faculty members.

The National Board Review Course is designed to assist minority and/or disadvantaged students who have been unable to pass Part I of the National Board Examination. The course, offered for six weeks during August and September, provides each student with an extensive package of content review materials and room and board. Routine examinations and review sessions in each of the basic sciences are given. Lectures are conducted by medical school faculty who are nationally recognized experts in the subjects reviewed. Lectures on other topics such as study skills, note- and test-taking skills, time management, and test anxiety reduction are also offered.

Postgraduate Educational Programs

Residency Programs

The College of Medicine and its affiliated hospitals offer more than 600 residency positions in almost all areas of medicine. Training levels range from first-year residencies through sixth- and seventh-year levels and 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 College of Medicine department.

All residency programs meet the formal standards of the American Medical Association 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 the UCI Medical Center at some time. Residents in anesthesiology, dermatology, diagnostic radiology, therapeutic radiology, medicine, neurology, ophthalmology, pathology, surgery, physical medicine and rehabilitation, and psychiatry also rotate to the Veterans Administration Medical Center, Long Beach (VAMCLB). Residents in medicine, family medicine, obstetrics and gynecology, neurology, ophthalmology, pathology, pediatrics, physical medicine and rehabilitation, diagnostic radiology, surgery, and therapeutic radiology also rotate to the Memorial Hospital Medical Center (MHMC), Long Beach. Residents may also spend periods of time at other affiliated hospitals and clinics.

Anesthesiology

The Anesthesiology Residency Program offers training for residents at the postgraduate PG-2 to PG-4 levels. The residents spend three years in intensive clinical anesthesia training at VAMCLB, San Bernardino County Medical Center, and UCI Medical Center, with a one-month rotation at Children's Hospital of Los Angeles and a month of cardiac anesthesia at Cedars-Sinai Medical Center (Los Angeles). Training is offered in general anesthesia, regional anesthesia, cardiac anesthesia, pediatric anesthesia, trauma anesthesia, neurosurgical anesthesia, anesthesia for all other surgical subspecialties, dental anesthesia, obstetric anesthesia, intensive care, respiratory therapy, and treatment of pain syndromes and outpatient anesthesia. Residents in their fourth postgraduate year may elect to take three to six months of subspecialty training in obstetrical anesthesia, critical care medicine, pediatric anesthesia, pain management, cardiac anesthesia, or research.

Dermatology

The Dermatology Residency Program provides a strong foundation in clinical dermatology, as well as experience in investigative dermatology. All areas of dermatologic care and its subspecialties are included in the three-year Program. The Program integrates

the activities of outpatient and inpatient facilities of the VAMCLB, the UCI Medical Center, faculty offices, and other clinical settings.

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 post-graduate years. The UCI Medical Center Emergency Department is a high-acuity, Level I Trauma Center, helicopter/paramedic base station, and regional poison center treating over 40,000 patients annually. Ten board-certified emergency medicine faculty provide 24-hour patient care and supervision of residents and medical students. The Division of Emergency Medicine is active in public affairs, community service, and research in the areas of prehospital care, instructional methods, health policy, critical care technology, and infectious disease, among others.

Family Medicine

The Family Practice Residency Program aspires to train competent family physicians who are prepared for practice in a setting of economic, ethnic, and cultural diversity. The program combines strong clinical rotations with ongoing training in family medicine that emphasizes behavioral medicine, cross-cultural medicine, preventive medicine, and geriatrics. Interest in health care for the medically underserved is encouraged.

Internal Medicine

The Department of Medicine's Residency Program is fully approved for three to five years of training by the American Medical Association's Council on Medical Education and Hospitals.

The resident positions are divided into a traditional three-year track (the majority of positions), a primary care track, a one-year-only program (one position), and a combined medicine/pediatrics program.

Residents spend the majority of their time at the UCI Medical Center and the VA Medical Center, Long Beach. They also rotate to Memorial Medical Center.

Teaching is done primarily by full-time faculty within the Department of Medicine. Subspecialty fellowships are offered in basic and clinical immunology, cardiology, endocrinology and metabolic diseases, gastroenterology, hematology/oncology, infectious disease, nephrology, primary care, pulmonary disease, rheumatology, and occupational medicine.

Medicine/Pediatrics (Combined Residency Program)

The Departments of Pediatrics and Medicine offer a four-year combined residency in medicine and pediatrics. This program was developed to blend two of the major specialties of medicine to allow residents to gain an in-depth understanding of both disciplines. This combined residency is expected to produce physicians who are capable of full-time practice in either discipline. Graduates are eligible for Board certification in both internal medicine and pediatrics.

Neurology

The Neurology Residency Program emphasizes the education and training of neurologists to meet the clinical needs of their patients by using both traditional methods and new techniques, some of which have been developed at the UCI Medical Center. Training takes the form of graded responsibility for inpatient care, regular outpatient clinical responsibilities, and rotations in associated

neurological specialties. The Department strongly believes that an understanding of basic research methods is essential for the training of clinicians who will deal with the diversity of clinical problems in modern neurology. Thus, during the three-year training program, residents have the opportunity to participate in a variety of ongoing basic and clinical research projects within the Department.

Obstetrics and Gynecology

This four-year program provides a solid foundation of reproductive pathophysiology in the obstetric, gynecologic, endocrinologic, and oncologic aspects 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, oncology, and endocrinology. There are seven resident positions available each year.

Occupational 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.

Ophthalmology

The three-year Ophthalmology Residency Program provides extensive clinical experience in conjunction with yearly basic research projects. The Department focuses on the total care of the patient, and training in a broad spectrum of disease and/or injury is coupled with an increasing level of responsibility in patient management. Surgical experience is provided in the full range of ophthalmic subspecialties, and 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.

Pathology

The Department of Pathology offers a residency training program covering all areas of anatomic and clinical pathology. The program is affiliated with Memorial Medical Center, Long Beach and the Veterans Administration Medical Center, Long Beach. The training for the combined anatomic and clinical pathology program consists of six months training in both anatomic and clinical pathology each year. The first two 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. The program is flexible to permit concentrated study in one of the subspecialties of clinical pathology or in straight anatomic pathology during the last two years.

Ample opportunities for research and teaching exist for individuals wishing an academic career. The opportunity for excellent

preparation is also provided for individuals planning on a 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 of the Department 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 three major teaching hospitals—the UCI Medical Center, the Miller Children's Hospital (located at Memorial Hospital Medical Center, Long Beach), and Children's Hospital of Orange County. The faculty at these institutions provide 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.

The Pediatric Primary Care Training Program is for residents who are particularly interested in practicing or teaching primary care pediatrics. The program blends an emphasis on ambulatory, continuous, primary pediatric care with training in traditionally underemphasized subspecialty areas such as learning and language disabilities, adolescent medicine, genetics and genetic counseling, and community medicine. It is designed to produce top caliber pediatricians who have the special skills essential to primary care practice.

Physical Medicine and Rehabilitation

The Department of Physical Medicine and Rehabilitation offers both a four-year combined internship-residency and a three-year residency for applicants who have had training in another field. The focus of both programs 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.

Psychiatry

The Psychiatry Residency Program is a four-year program that fosters individuality, academic excellence, and broad patient experience. The core curriculum includes basic seminars, adult inpatient and outpatient psychiatry, child psychiatry, medicine, neurology, emergency psychiatry, consultation and liaison psychiatry, forensic psychiatry, psychopharmacology, and substance abuse. Residents spend time at the UCI Medical Center, private facilities, VAMCLB, and a State hospital, all of which provide a broad base and mix of experience in psychopathology. A wide variety of elective courses and experiences are available in this flexible, eclectic program. All residents are expected to complete a research project of high quality prior to completion of the program.

Radiological Sciences (Diagnostic Radiology)

The Department of Radiological Sciences has 28 residents training for certification in diagnostic radiology. The program is based at the UCI Medical Center and integrated with VAMCLB, and MHMC. Residents rotate through all three institutions.



The first year of the M.D. curriculum includes lectures and laboratories in gross anatomy and embryology, nutrition, histology, biochemistry, physiology, neuroanatomy, behavioral sciences, and microbiology.

The objectives of the program are (1) to provide individuals with a solid background in all modalities of imaging, (2) to provide an atmosphere conducive to research and to encourage opportunities for residents to participate in research work with physicians and scientists, and (3) to provide elective periods in which residents can work in given areas of the Department to increase their expertise or work on research projects during their residency training.

The residency program includes specialized training in interventional radiology, ultrasonography, nuclear medicine, computerized tomography, magnetic resonance imaging, and spectroscopy, as well as opportunities to participate in major research programs conducted in the Department. All residents are expected to complete at least one major paper during the program.

Candidates are accepted only at the postgraduate-2 level for a 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 UCI Medical Center and the College's affiliated institutions.

Radiological Sciences (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 one year of research experience. Unique opportunities exist for training in the use of interstitial and intracavitary treatment using radioactive isotopes and specially designed applicators. Elective rotation periods may be

spent in related branches of medicine (e.g., medical oncology, surgical pathology, gynecologic oncology) or at other radiation oncology departments. The Program includes obligatory rotations at five participating hospitals: UCI Medical Center, VAMCLB, MHMC, City of Hope National Medical Center, and St. Joseph Hospital.

Radiological Sciences (Therapeutic Radiology)

The Residency Training Program in Therapeutic Radiology is designed to prepare suitably qualified applicants for careers in radiation oncology. Candidates enter a four-year program which includes one year of research experience. Unique opportunities exist for training in the use of interstitial and intracavitary treatment using radioactive isotopes and specially designed applicators. Elective rotation periods may be spent in related branches of medicine (e.g., medical oncology, surgical pathology, gynecologic oncology, etc.) or at other radiation therapy departments. The Program includes obligatory rotations at five participating hospitals: UCI Medical Center, VAMCLB, MHMC, City of Hope National Medical Center, and St. Joseph Hospital.

Radiological Sciences (Nuclear Medicine)

Candidates who wish to obtain certification for the Board of Nuclear Medicine or who wish to have further training in nuclear medicine must have completed the required period of prior residency training in either diagnostic radiology, internal medicine, or pathology.

The Nuclear Medicine Training Program involves one or two years and includes clinical and basic science components. It is a

joint program with rotations at UCI Medical Center and VAM-CLB. Didactic lecture series include physics, instrumentation, radiopharmacy computer principles, and radiation protection. All trainees are expected to be involved in some degree of research during the program.

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, neurological surgery, orthopedic surgery, otolaryngology (head and neck) surgery, plastic surgery, and urology.

Graduate Academic Programs

The College's basic medical science departments of Anatomy and Neurobiology, Biological Chemistry, Microbiology and Molecular Genetics, 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 Community and Environmental Medicine, the Department of Radiological Sciences, and the Department of Pharmacology offer M.S. and Ph.D. programs. In addition, the Department of Pediatrics offers an M.S. degree in Genetics Counseling.

Application materials may be obtained by writing to the individual graduate programs or the:

Office of Research and Graduate Studies
145 Administration Building
University of California
Irvine, CA 92717
(714) 856-7295

Anatomy and Neurobiology

Faculty

Edward G. Jones, *Department Chair*: Sensory-motor anatomy and physiology
 Robert H. Blanks: Vestibular physiology and anatomy
 James H. Fallon: Monoamine systems, neuronal growth factors, neurotransmitter interactions
 M. Gall: Central nervous system morphological plasticity
 Roland A. Giolli: Experimental neuroanatomy; visual system
 Stewart H.C. Hendry: Visual cortex, structure and plasticity
 Paul J. Isackson: Molecular biology of neurotrophic factors
 Glenn H. Kageyama: Development of oxidative metabolism in the brain
 Herbert P. Killackey: Developmental neuroanatomy; somatosensory system
 Leonard M. Kitzes: Auditory neurophysiology; anatomy; development
 Ian Lipkin: Molecular biology of neurotropic viruses
 Sandra E. Loughlin-Burkhead: Developmental neurobiology of neurotransmitter systems; Parkinson's disease
 Diane K. O'Dowd: Molecular biology of membrane ion channels
 Charles E. Ribak: Neurocytology; immunocytochemistry; neurotransmitters; neuronal circuitry
 Richard T. Robertson, *Vice Chair*: Experimental neurobiology; development; forebrain organization
 Malcolm N. Semple: Auditory neurophysiology
 Martin Smith: Molecular genetics of extracellular matrix molecules
 John E. Swett: Peripheral nervous system, spinal cord, pain mechanisms
 Yasuhiro Torigoe: Visual and vestibular regulation of eye movements

The Department of Anatomy and Neurobiology in the College of Medicine offers a doctoral program leading to the Ph.D. degree in Biological Sciences, with specialized research training in the neurosciences. Research programs in the neurosciences include neurotransmitter immunocytochemistry, intracellular physiology, molecular neurobiology, forebrain organization and development, and structure and function of sensory and motor systems. The Department maintains research facilities so that the student can become experienced with the following techniques: electron microscopy; immunocytochemistry; molecular neurobiology; fluorescence histochemistry; neuroanatomical tracing; single- and multiple-unit neurophysiology; and computer analysis of neuroscientific data. Students are encouraged to become proficient in multiple areas of study using numerous interdisciplinary techniques.

Students in the Department of Anatomy and Neurobiology have two major goals. The first goal is to attain the technical skills, theoretical background, and experimental knowledge necessary to conduct innovative and fundamental research. The second goal is to gain the knowledge and ability to teach graduate, undergraduate, and professional courses in anatomy and neuroscience. These two goals are achieved through a basic and extended academic program that is tailored to the individual needs of the student.

The core curriculum is designed to provide all students with a fundamental knowledge of modern neurobiology, with an emphasis on morphology, chemistry, and physiology. In the first year, students are required to take selected courses in neuroanatomy and neurophysiology, including a year-long course in neural science techniques. In the second year, students take a year-long course in neural systems as well as neurochemistry and neuropharmacology courses. Over the usual four-year training period, the student will be required to complete a practical course in statistics, selected departmental seminar courses, at least two laboratory rotations, and a total of 50 credit hours of research in anatomy. Elective courses in the Department of Anatomy and Neurobiology or other departments on campus may also be taken; research and training in areas other than neurobiology are possible. The student typically devotes the majority of the first year to taking core courses and about half of the second year to taking electives. Following the first year, the student is expected to act as an assistant in one major anatomy core course.

The emphasis of the graduate program in Anatomy and Neurobiology is on research, and a student's participation in laboratory research begins in the first week of graduate study. Students rotate through at least two laboratories during the first two years. By the end of the second year the student and the Graduate Committee select a faculty sponsor who will supervise the dissertation research. A two-part qualifying examination at the end of the fall quarter of the third year is given to the student by a Candidacy Committee. The first part consists of a written examination in three of the following areas: molecular and cellular neuroscience, developmental neuroscience, neural systems-sensory, neural systems-motor, and neural systems-other. The second part consists of an oral examination.

The dissertation research is chosen by the student and faculty advisor under guidance of the Dissertation Committee. The majority of the third and fourth year is devoted to completing the research and preparing a written dissertation suitable for publication.

An oral defense of the dissertation research before the student's advisor and Dissertation Committee constitutes the final examination. The Ph.D. degree in Biological Sciences is awarded following completion of all the requirements, a process that normally will take four years to complete.

Information on specific course descriptions in anatomy can be found in the School of Biological Sciences section.

Biological Chemistry

Faculty

Ralph A. Bradshaw, *Department Chair*: Structure and function of enzymes and growth factors and their genes
 Stuart M. Arfin: Genetic and biochemical regulatory mechanisms in mammalian systems
 Chris L. Greer: Eukaryotic RNA processing pathways; RNA splicing and gene expression
 Michelle M. Hanna: Photocrosslinking determination of transcription and translocation mechanisms
 Kenneth H. Ibsen: Properties, distribution, and control of expression of isoenzymes
 Lee McAlister-Henn: Molecular genetics of compartmentalized isozymes
 Calvin S. McLaughlin: Genetic and biochemical approaches to the synthesis of proteins and ribonucleic acids and their regulation in eucaryotic cells
 Masayasu Nomura: Structure, function, and biosynthesis of ribosomes; regulation of gene expression
 Robert E. Steele: Molecular biology of signal transduction
 John J. Wasmuth: Regulation of amino acid metabolism; mammalian cell genetics

Graduate instruction and research in molecular and cellular biochemistry leading to the Ph.D. in Biological Sciences is offered by the Department of Biological Chemistry in the College of Medicine. The curriculum is designed to prepare students for creative and productive careers in academic science and biotechnology. Faculty research interests focus on the regulation of gene expression (RNA splicing, mammalian chromosomal organization, and nucleic acid-protein interactions) and the regulation of cellular processes (membrane-hormone interactions, regulation of protein synthesis, molecular genetics of metabolic processes, and intracellular protein localization). Students are exposed to technical expertise in all facets of current research in molecular biochemistry from protein chemistry to genetic engineering.

In the first year, emphasis is placed on immediate research participation, supported by formal course work in protein and nucleic acid chemistry and function, enzymology, biological regulatory mechanisms, cell biology, and somatic cell and molecular genetics. Initial laboratory experiences are achieved by rotation through several laboratories with selection of an advisor occurring at the end of the first year. Student competence and critical thinking in the molecular aspects of biological sciences are tested by comprehensive examination following the first year of study. At the beginning of 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. Completion of the Ph.D. degree normally requires five years.

Applicants for admission are expected to be well-prepared in the biological and chemical sciences. Graduate Record Examination General Test and Biology or Chemistry Subject Test scores are required.

Information on course descriptions may be found in the School of Biological Sciences section.

Environmental Toxicology

Faculty

Daniel B. Menzel, *Department Chair*: Toxicokinetics and mechanisms of carcinogenesis; biochemical toxicology
 Kenneth M. Baldwin: Exercise physiology and muscular stress
 Deepak K. Bhalla: Cell response to toxicants including transport of large molecules across pulmonary membranes
 Stephen C. Bondy: Neurotoxicology; biochemical changes in membranes resulting from toxic exposures

Michael T. Kleinman: Uptake and distribution of inhaled toxic materials in the respiratory tract; effects of air pollutants on cardiopulmonary function

William J. Mautz: Respiration, comparative and exercise physiology and the effects of air pollution on health

Calvin S. McLaughlin: Biochemical toxicology and regulation of protein synthesis; mechanisms of action of mycotoxins including trichothecenes.

Betty H. Olson: Environmental microbiology and water chemistry; public policy issues in environmental toxicology

Robert F. Phalen: Biophysics, aerosol science, and inhalation toxicology; toxicity of mixtures of particles and gases, lung defenses, and particle deposition in airways.

Ronald E. Rasmussen: Cell biology and physiology; DNA repair, chemical carcinogenesis

Eloy Rodriguez: Phytochemistry and dermatotoxicology; biological chemistry of natural constituents of desert and tropical plants

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 Department of Community and Environmental Medicine provides training in environmental toxicology, culminating with the award of the degree of Master of Science or Doctor of Philosophy 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, and toxicokinetics.

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; (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 contact 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, and neurotoxicology.

The University of California, Riverside (UCR) also offers a graduate program in environmental toxicology which emphasizes natural resources and environmental sciences. The UCI program, in contrast, emphasizes health effects and medical sciences. Cooperative arrangements facilitate interaction between the two programs.

In addition to meeting the general admission requirements set by the Office of Research and Graduate Studies, applicants must be admitted by an Admissions Committee composed of faculty members from the Department of Community and Environmental 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 the biological and physical sciences.

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; 32 quarter units of chemistry, including four quarter units of physical chemistry in which calculus is used; 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, 202, 298, and 299, Physiology and Biophysics 206A-B, Molecular Biology and Biochemistry 203 and 204, Pharmacology and Toxicology 252, and Anatomy and Neurobiology 203. The core requirements for the Master's degree include Environmental Toxicology 201, 202, 298A-B-C, and 299, and Pharmacology and Toxicology 252. In addition, for either program competence in statistical experimental design and computer science must be demonstrated in the student's research project.

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, exercise physiology and stress, and environmental microbiology and chemistry.

Graduate study in environmental toxicology is supported by a training grant from the National Institute of Environmental Health Sciences which offers stipends, tuition, and fees to qualified predoctoral graduate students and postdoctoral fellows. Research grants and contracts are available to support additional students as research assistants.

Graduate Courses in Environmental Toxicology

201 Principles of Toxicology (3) W. Structure-activity relationship and the receptor; dose-response relationships; absorption, distribution, and metabolism; quantitative methods in measuring acute and chronic toxicity; principles of toxic injury to tissues, especially liver; chemical carcinogenesis, mutagenesis, and teratogenesis; molecular mechanisms of toxic action. Same as Pharmacology and Toxicology 260.

202 Environmental Toxicology (3) S. Survey of toxicants in the environment (food, air, and water supplies); description of exposure and effects, especially in human populations; mechanisms of toxic action where known. Same as Pharmacology and Toxicology 265.

204 Introduction to Neurotoxicology (3) F. 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.

205 Toxins and Cellular Injury (4) S. In-depth examination of potent toxins of animal, microbial, and plant origin that are responsible for cell damage in animals and plants. Mechanisms of cellular toxicity with focus on the nucleus (nucleic acids), microtubules, mitochondria, and chloroplasts. Teratogens. Same as Developmental and Cell Biology 236.

212 Inhalation Toxicology (3) F. 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.

213 Respiratory Physiology and Toxicology (3) W. Critical review of pulmonary physiology and toxicology with emphasis on mechanisms of toxicology, pulmonary toxicokinetics of gases and particles, lung mechanics, structure-functional aspects of lung injury and exercise physiology. Students participate in seminars and discussion groups. Prerequisites: previous course work in general histology and physiology.

230 Chemical Mutagenesis and Carcinogenesis (3) S. History of cancer and mechanisms in carcinogenesis; structure-activity relationships in chemical carcinogenesis; kinetics of metabolic activation of carcinogens; DNA repair and immunosuppression; mutagenicity as a predictor of carcinogenicity; *in vivo* and *in vitro* methods in mutagenicity and carcinogenicity testing.

270 Epidemiology and Biostatistics (4). Presents descriptive and experimental approaches to the recognition of the causal association of disease for the occupational setting, as these approaches apply to populations using different study designs and models from the literature, and with frequent assistance of laboratory methods. Prerequisite: graduate standing or consent of instructor. Same as Social Ecology 215.

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. In Progress grading. 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.

Genetics Counseling

Faculty

Maureen Bocian, *Division Chief*: Heterogeneity and variability in genetic syndromes; new syndrome identification; skeletal dysplasias; neurofibromatosis

Renée Bernstein: Chromosomal changes in cancer: X and Y chromosome abnormalities and sexual differentiation

Kenneth W. Dumars: Epidemiology of congenital and chromosomal abnormalities; gene linkage in tuberous sclerosis; genetic disease in Southeast Asians

Denise Greene: Support groups for genetic disease; anxiety in genetic screening

Moyra Smith: Development and chromosomal assignment of DNA probes for human genes; linkage and gene mapping in neurogenetic disorders; genetics and regulation of alcohol metabolizing enzymes

Kathryn Steinhaus: Prenatal genetic diagnosis

Ann P. Walker: Genetic counseling; delivery of genetic services; computer uses in clinical genetics; genetics education

The Division of Human Genetics in the College of Medicine's Department of Pediatrics offers graduate education leading to the Master of Science degree in Genetics Counseling. Graduates of the program are prepared to function as members of genetics teams engaged in providing clinical services, teaching, and research. Other roles for program graduates may include employment in local, state, or federal genetics programs, in categorical disease foundations, or in public education.

Division faculty and staff are involved in teaching, research, and patient service. Clinical activities include evaluation, early ascertainment, prenatal diagnosis, prevention, and management of genetic disorders, birth defects, and developmentally disabling conditions. Among faculty research interests are gene mapping and linkage analysis using DNA probes; delineation of new malformation and chromosomal syndromes; late-onset single-gene disorders; the incidence and perception of genetic disease, birth defects, and developmental disabilities in underserved ethnic populations; factors in the etiology of chromosomal abnormalities and congenital malformations; the cytogenetics of cancer and sexual differentiation; psychosocial issues in genetic disease and prenatal diagnosis; and delivery of genetic services.

During the six to eight academic quarters of the program, students must complete a sequence of core courses in medical genetics, biochemical and molecular genetics, cytogenetics, child development, counseling issues and techniques, research methodology, ethical issues, and community resources. Experiential professional training occurs concurrently with formal course work in a variety of clinics at the UCI Medical Center and affiliated hospitals, in the prenatal diagnosis program, in the cytogenetics laboratory, and in certain community agencies. Participation in these and other divisional and departmental professional and educational activities such as lectures, seminars, Pediatric and Obstetrics Grand Rounds, cytogenetics rounds, and research, counseling, and patient management conferences is expected throughout the program.

Completion of the program requires a minimum of 58 quarter units of credit, a research thesis which should be publishable, and demonstration of satisfactory professional skills in genetic counseling. The program director serves as faculty advisor to students, although teaching and supervision of professional experiential training is shared among all division faculty and staff, who frequently review student progress. In the second year, development of professional skills can be individualized according to the student's needs and interests. It is anticipated that graduates will be eligible for American Board of Medical Genetics certification in genetic counseling within a year of completing the program.

Recommended undergraduate preparation includes course work in the biological and social sciences, especially in genetics, biochemistry, psychology, and human development. Course work in statistics is desirable. Facility in Spanish or a Southeast Asian language is a considerable asset. Extracurricular and/or employment experiences which 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. Graduate Record Examination (GRE) General Test scores must be submitted and Subject Test scores will be considered if they are available.

Applications are accepted for the fall quarter only and must be completed by February 1. Because of keen competition for places in the program, a two-stage admissions process is employed, with approximately one-fifth of the applicants being invited for interviews at UCI following an initial review of applications by the faculty. Interviews usually are conducted from March through early April, and the final selection is made from among the interviewed candidates during mid- to late April.

Graduate Courses in Genetics Counseling

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 inheritance are presented and illustrated.

200B Quantitative Genetics, Genetic Screening, Teratology (4) W. Lecture, three hours; cytogenetics conference, one hour. Quantitative aspects of human genetics, including population studies, linkage analysis, and genetic risk determination. Principles and techniques of prenatal, neonatal, and heterozygote screening. Pregnancy, delivery, and pre- and postnatal growth and development, with attention to reproductive and fetal effects of drugs, radiation, and other environmental factors. Prerequisite: 200A.

200C Human Genetic Disorders (4) S. Lecture, three hours; cytogenetics conference, one hour. Reviews a wide variety of genetic diseases, syndromes, and malformations from the standpoints of inheritance, diagnosis, natural history, and management. Prerequisites: 200A and 200B.

200D Disorders Due to Inborn Errors of Metabolism (4) F or W (alternate 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: 200A or consent of instructor.

200E Molecular Genetics (4) S (alternate years). Lecture, two 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: 200A, 200D, or consent of instructor.

200L Cytogenetics Laboratory (4) W, S, Summer. 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 Genetics Counseling students.

201A Introduction to Genetic Counseling (4) F. Seminar and fieldwork. By observing genetics evaluations, consultations, and patient management conferences, and through directed readings and discussions, students are introduced to the process of diagnosis, management, and counseling for genetic disease. Psychosocial issues in genetics are emphasized; instruction includes interviewing techniques, pedigree construction, and various other clinical skills. Open only to Genetics Counseling students.

201B Clinical Rotation I (4) W, S, Summer. 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 Genetics Counseling students.

201C Clinical Rotation II (4) S, Summer. 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 Genetics Counseling students.

201D Prenatal Diagnosis Counseling (4) Summer. 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 Genetics Counseling students. Prerequisites: 200A, 200B, and 200C.

202A Counseling in Human Genetics: Theory and Methods (3) F. 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 prac-

ticed in class. Open to students enrolled in the Genetics Counseling program only.

202B Community Resources (2) W. 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 to students enrolled in the Genetics Counseling program only.

202C Ethical Issues in Human Genetics (2) S. 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 Child Development for Genetic Counselors: Birth to Childhood (2) W (alternate years). An overview of normative human development from conception through the first five years of life. Emphasis is placed on cognitive, perceptual, motoric, social, and emotional aspects of development, and how these are affected by genetic disease and/or developmental disability. Open to students enrolled in the Genetics Counseling program only.

203B Child Development for Genetic Counselors: Latency through Adolescence (2) S (alternate years). Normative human development from childhood through adolescence. The impact of genetic disease and/or development disability at various stages of cognitive, perceptual, motoric, social, and emotional development. Particular attention is paid to separation/individuation processes, sexual identity formation, and teen pregnancy issues. Prerequisites: Genetics Counseling 203A; open to students enrolled in the Genetics Counseling program only.

204 Professional Skills Development (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 to students enrolled in the Genetics Counseling program only.

295 Master's Thesis Research and Writing (2 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

Faculty

- Dennis D. Cunningham, *Department Chair*: Control of extracellular proteinases by protease nexins; proteolytic regulation of cell proliferation and differentiation
- Alan L. Goldin: Molecular biology of the sodium channel; neurotropic virus-cell interactions
- George A. Gutman: Immunogenetics; antibody structure and gene organization
- G. Wesley Hatfield: Molecular mechanisms of biological control systems in *Escherichia coli*
- Harris S. Moyed: Molecular genetics of antibiotic persistence in bacteria
- Suzanne B. Sandmeyer: Eukaryotic gene organization; transposable elements and tRNA genes in yeast
- Rozanne Sandri-Goldin: Molecular biology of herpesvirus; regulation of eukaryotic gene expression
- Bert L. Semler: Molecular biology of RNA viruses; expression of cloned DNA copies of poliovirus RNA in eukaryotic vectors
- Eric J. Stanbridge: Molecular genetics of cancer; mycoplasmas; medical microbiology
- Paul S. Sypher: Molecular genetics of cellular morphogenesis in microorganisms

Graduate instruction and research opportunities in microbiology and molecular genetics leading to the Ph.D. in Biological Sciences are offered by the Department of Microbiology and Molecular Genetics. The curriculum of the Department is designed to

provide advanced training to individuals interested in the molecular basis of genetic regulation in viruses, microorganisms, and cultured mammalian cells; and in the structure, genetics, and synthesis of immunoglobulins. The core curriculum focuses on the molecular biology and genetics of viruses and bacteria, the fundamentals of the immune response, the molecular biology of cultured animal cells, and the genetics and physiology of infectious agents.

It is strongly recommended that the student's undergraduate preparation include courses in calculus, physical chemistry, biochemistry, genetics, and general biology. Applicants must take the Graduate Record Examination (verbal, quantitative, and analytical) and subject section in biochemistry, cell and molecular biology, biology, chemistry, or physics. Before a graduate degree will be awarded, the student must demonstrate competence, by course work and examination, in biochemistry, physical chemistry, genetics, molecular biology, and various aspects of microbiology and immunology. During the first year, all students in the graduate program spend nine weeks in each of four faculty members' laboratories with the aim of becoming familiar with the research approaches and the laboratory techniques employed in each specific research area. Incoming students review their programs each quarter with the departmental graduate student advisor. During fall of the third year, each student takes an advancement to candidacy examination. Graduate students are required to take Molecular Biology and Biochemistry 203 through 208 and Microbiology and Molecular Genetics courses. The major remaining requirement for the Ph.D. degree will be the satisfactory completion and oral defense of a dissertation consisting of original research carried out under the guidance of a faculty member. Students with adequate preparation should be able to complete the Ph.D. within five years.

Information on course descriptions may be found in the School of Biological Sciences section.

Pharmacology and Toxicology

Faculty

- Larry Stein, *Department Chair*: Neurochemistry of reward, punishment, and long-term memory
- James D. Belluzzi: Behavioral neurochemistry and neurophysiology of brain substrates of reward and memory; computer methods in neuroscience
- Floyd E. Bloom: Neurotransmitter pharmacology and brain localization, behavioral neurobiology. *Director*, Division of Preclinical Neuroscience and Endocrinology, Scripps Clinic and Research Foundation, University of California, San Diego
- Stephen C. Bondy: Mechanisms of neural regenerative responses to neurologic insults
- William E. Bunney, Jr.: Clinical psychobiological and neuropsychopharmacological studies of manic-depressive illness, schizophrenia and childhood mental illness
- Sue Piper Duckles: Pharmacology and physiology of vascular smooth muscle; regulation of cerebral circulation, pharmacology of the autonomic nervous system
- Frederick J. Ehler: Muscarinic receptor coupling mechanisms; subtypes of muscarinic receptors
- Diana N. Krause: Cerebrovascular and neurotransmitter pharmacology; regulation of the blood-brain barrier
- Irving H. Leopold: Ophthalmological pharmacology
- Frances M. Leslie: Pharmacological characterization of multiple neurotransmitter receptors; physiological role of endogenous opioids
- Sandra E. Loughlin: Development and plasticity of monoamine and peptide systems in mammalian brain; role of growth factors
- Donald A. McAfee: Second messengers in regulation of synaptic efficacy
- Ralph E. Purdy: Vascular neurotransmitter receptors, second messengers and signal transduction; cardiac energy metabolism

Peter T. Ridley: Cardiovascular and gastrointestinal pharmacology, CNS and skeletal-muscle pharmacology, ophthalmological and dermatological pharmacology

Eckard Weber: Biochemical and pharmacological characterization of receptors for PCP/NMDA/Glycine

Graduate instruction and research in pharmacology leading to the M.S. and Ph.D. in Pharmacology and Toxicology is offered by the Department of Pharmacology. The Department is engaged in a broad scope of research activity. Faculty research interests include the mechanisms of action and effects of drugs on the nervous system and on behavior, on skeletal muscle, heart and blood vessels, and on basic processes in these tissues. Other areas of interest are the toxicology of environmental substances, especially inhalation toxicology, genetic toxicology, and chemical carcinogenesis.

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 and Subject Test in Biology or Chemistry are required. Primary emphasis in the Department's graduate program is placed on training leading to the Ph.D. in Pharmacology; under exceptional circumstances a student may be admitted initially into the M.S. program.

The graduate core program includes Pharmacology 241A-B, 252, 253, 254, 255, and 260, quarterly participation in Pharmacology 298, and any additional elective courses assigned by faculty advisors. 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 research assistant 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. All requirements for the Ph.D. degree should be completed within four to five years. For more information, contact the Graduate Advisor, Department of Pharmacology.

Graduate Courses in Pharmacology and Toxicology

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 (6-6) F, W. Lecture, eight hours. Mechanism of action, toxicology, and usage of chemical agents in medical practice. Dose-response and time relationships, absorption, metabolism, excretion, and differences in systematic and species response. Poisons, principles of toxic action, and toxicity evaluation. Sources of toxicants in the environment. Prescription writing. Prerequisites: Physiology and Biophysics 206A-B and Molecular Biology and Biochemistry 210A-B.

248A-B-C Advanced Topics in Pharmacology (4-4-4). Lecture, conferences, seminars, four hours. A detailed study of important areas of pharmacology integrating biochemical, pathological, physiological, behavioral, and clinical aspects with emphasis on mechanism of action of drugs. Prerequisites: Pharmacology 241A-B.

252 Neurotransmitter and Drug Receptors (6) S. Lecture, three hours. Seminar, three hours. Evolution of the receptor concept, analysis of receptor properties by bioassay methodology, receptor binding studies,



The College of Medicine has 380 medical students, 150 graduate students, and 610 resident-physicians and fellows.

solubilization and purification of receptors, electrophysiologic analysis of receptor channels, and cell biology of receptors.

253 Pharmacology of the Cardiovascular System (4) W. Lecture, one hour; seminar, two hours. Important aspects of cardiovascular pharmacology including adrenergic neurotransmission and the pharmacology of calcium; neuronal uptake, storage, and release of catecholamines; postsynaptic alpha-1 and alpha-2 adrenergic receptors; calcium entry and intracellular release; calcium channel agonists and antagonists; calmodulin; inositol phosphate mechanisms. Prerequisite: consent of instructor.

254 Methods in Pharmacology (4 to 12) Summer. Lecture, four hours; laboratory, eight hours. Isolated tissues for receptor characterization, autoradiography, tissue culture, electrophysiological measurements, behavioral assays, radioligand binding methods, chromatography, centrifugation and other methods for subcellular tissue preparation, small animal handling, synaptosomes, and isolated tissues for the study of neurotransmission. May be taken for credit three times with consent of instructor. Letter grade only the first time taken, Satisfactory/Unsatisfactory Only thereafter.

255 Central Nervous System Pharmacology: Disease Processes (4) F. Seminar, two hours. The molecular mechanisms and pharmacology of brain diseases. Includes review of Alzheimer's disease, diseases of the basal ganglia, pharmacology of drug abuse, and the pharmacology of memory. Prerequisite: consent of instructor.

260 Principles of Toxicology (3) W. Lecture, three hours. Structure-activity relationship and the receptor; dose-response relationships; absorption, distribution, and metabolism; quantitative methods in measuring acute and chronic toxicity; principles of toxic injury to tissues, especially liver; chemical carcinogenesis, mutagenesis, and teratogenesis; molecular mechanisms of toxic action. Same as Environmental Toxicology 201.

265 Environmental Toxicology (3) S. Lecture, three hours. Survey of toxicants in the environment (food, air, and water supplies); description of exposure and effects, especially in human populations; mechanisms of toxic action where known. Same as Environmental Toxicology 202.

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 8) F, W, S. Research work for M.S. thesis and/or Ph.D. dissertation.

Physiology and Biophysics

Faculty

- Scott E. Fraser, *Department Chair*: Developmental neurobiology and pattern formation; development and plasticity of the lower-vertebrate visual system; gap junctions in tissue patterning
- Kenneth M. Baldwin: Hormonal and exercise factors regulating biochemical properties of muscle
- Marianne Bronner-Fraser: Developmental neurobiology; migration and differentiation of the avian neural crest
- Michael D. Cahalan: Ion channels in the nervous and immune system
- Alan L. Goldin: Molecular biology of neural channels and receptors
- Harry T. Haigler: Cellular and molecular mechanisms by which EGF stimulates cell replication
- James E. Hall: Molecular aspects of ionic conductance in membranes; channel reconstitution
- Daniel Hollander: Gastrointestinal physiology; aging and nutrient absorption
- Russell E. Jacobs: Peptide-membrane interactions; MRI in developmental biology
- Janos K. Lanyi: Bioenergetics of membrane transport by bacterial retinal proteins
- Kenneth J. Longmuir: Metabolism and intracellular transport of lipid in mammalian cells; metabolism of pulmonary surfactant
- Larry E. Vickery: Enzyme mechanisms and regulation of steroid hormone biosynthesis
- Stephen H. White: Membrane structure; physical chemistry of membranes and lipid bilayers

Graduate instruction and research in physiology and biophysics leading to the Ph.D. in Biological Sciences are offered by the Department of Physiology and Biophysics, College of Medicine. The Department provides research opportunities in the molecular biophysics of membranes and proteins, endocrinology, molecular and cell biology, developmental neurobiology, and exercise physiology. The curriculum provides the student with a broad background in physiology and biophysics and the closely related fields of cell biology and biochemistry. Elective courses permit in-depth exploration of particular areas. Interdisciplinary dissertation research involving the research of more than one faculty member is encouraged.

Prerequisites for admission normally include a bachelor's degree in one of the biological sciences, physics, chemistry, mathematics, or engineering, as well as undergraduate courses in calculus, organic and physical chemistry, biochemistry, and advanced biology (e.g., neurophysiology, cell biology, neurobiology, psychobiology). Up to two prerequisites may be fulfilled as first-year electives. GRE General Test scores are required. Preference will be given to those students who have prior research experience.

The Department admits about three highly qualified students each fall. The program emphasizes original research, and students are expected to become involved in the research of the Department as early as possible. The core program includes graduate courses in physiology, biophysics, biochemistry, and cell biology. After the first year, training will continue through in-depth, advanced physiology courses, combining discussion with laboratory exercises. Students will participate in a research seminar designed to strengthen research techniques and presentation as well as attend the weekly colloquium in physiology. Each student must submit a written dissertation on an original research project and successfully defend this dissertation in an oral examination.

Incoming students will receive academic advising from the Department Graduate Advisor until such time as they choose a thesis advisor. The faculty conducts quarterly reviews of all continuing students to ensure that they are maintaining satisfactory progress within their particular academic program. Students who have completed all necessary prerequisites should be able to complete the Ph.D. within five years.

A comprehensive examination will be administered at the end of the first year. The examination is based upon material in the advanced physiology series and is designed to test the student's ability to organize a body of knowledge and to think critically. During the third year, the student will present a seminar on a topic approved by the formal candidacy committee. Following the seminar, the committee will critically examine the student's qualifications for the successful conduct of the doctoral dissertation. Advancement to candidacy for the Ph.D. is recommended to the Dean of Graduate Studies upon the unanimous vote of the committee.

Information on course descriptions may be found in the School of Biological Sciences section.

Some faculty from the Department are members of an interdisciplinary biophysics and biophysical chemistry group; see the School of Biological Sciences section for a description of the program.

Radiological Sciences

Faculty

- Richard M. Friedenberg, *Department Chair*: MRI of the urogenital system; MRI microscopy
- Chang-Beom Ahn: Physical and mathematical aspects of multidimensional imaging; NMR imaging and microscopy; picture archiving and communication systems
- Anne-Line Anderson: Development of radiopharmaceuticals; quantitative structure-activity relationships
- Philip Braunstein: Emission tomography; nuclear cardiology; image perception, and related phenomena
- Richard Buxton: Physics and applications of nuclear magnetic resonance imaging; tracer kinetic models in nuclear medicine; medical image processing
- Zang-Hee Cho: Multidimensional imaging; NMR tomography, and positron emission tomography
- Martin Colman: Drug radiation interactions; optimization of time-dose factors in the treatment of cancer by irradiation; late effects of cancer treatment; radiation carcinogenesis
- Leonard A. Ferrari: Signal and image processing; computer engineering; ultrasonic imaging; ultrasonic tissue characterization
- Joie P. Jones: Ultrasonic tissue characterization; ultrasonic imaging; general applications of ultrasound technology; the propagation and scattering of ultrasonic pulses in inhomogeneous media; biological effects of ultrasound
- Frederick C. Ludwig: Mammalian radiation biology; late effects of radiation on blood-forming tissues and their relationship to the induction of leukemia
- Eric N.C. Milne: X-ray imaging and the development of improved x-ray sources; magnification and 3-D radiography; pulmonary and microvascular pathophysiology
- Sabee Molloy: Digital radiography; application of digital subtraction angiography to cardiac imaging; medical image processing
- Orhan Nalcioğlu: Imaging physics with specific applications to digital radiography, CT, and NMR tomography
- Bouchaib Rabbani: Influence of hyperthermia and sequencing on drug radiation cell killing; temperature dependence of drug-radiation interactions
- J. Leslie Redpath: Cellular and tissue radiobiology including mechanisms of chemical modification of radiation damage; oncogenic cell transformation; genetic aspects of cellular sensitivity
- Frederick Reines: Experimental particle physics; low-level counting; biological effects of ultrasound
- Werner Roeck: Engineering aspects of radiographic imaging systems; digital radiography
- Jack Sklansky: Computer-aided analysis of medical images; pattern recognition and information engineering

The Department of Radiological Sciences offers graduate programs of advanced study leading to the M.S. and Ph.D. degrees. Both programs are oriented toward the education and training of the superior student who has the potential and desire to become a creative and productive member of the medical or medical-related

communities. The primary concentration of the program is in imaging.

A broad-based, interdisciplinary curriculum places heavy emphasis on research and is designed to provide the student with a comprehensive knowledge of the field in addition to an exceptionally high level of competence in one or more subspecialties. By utilizing the training received in medical imaging, medical physics, bioengineering, radiobiology, and radiological engineering, the student should be prepared for a wide range of career opportunities in university, hospital, or industrial settings upon completion of this program. Prospective students are cautioned that the program is extremely demanding and requires a broad base of knowledge in a variety of the conventional disciplines.

The Department of Radiological Sciences has well-equipped research laboratories in imaging physics, radiation biology, radiation physics, radio-pharmacy, and radiological engineering located on campus and at the hospitals associated with UCI.

The core program plus additional courses as may be required by the Graduate Committee normally will require two years to complete. To receive either the M.S. or Ph.D. degree, the student must successfully complete the core courses or their equivalents.

Requirements for the M.S. degree may be satisfied in one of two ways. Under Plan I, the student completes the Radiological Sciences core program with an average grade of B or above and under the direction of a faculty advisor also prepares a thesis that is acceptable to the thesis committee. Under Plan II, the student completes the core program plus a minimum of eight additional credits (all with an average grade of B or above) in a given area of specialization and satisfactorily passes a comprehensive written examination.

Requirements for the Ph.D. degree may be divided into four stages. First, the student must complete the core program and take additional course work as recommended by the Graduate Committee, all with an average grade of B or above. Second, the student must pass a written and oral qualifying examination given at the end of the second full year of study. A student who fails the preliminary qualifying examination can, with approval from the Graduate Committee, repeat the examination the following year. Third, within a year after passing the preliminary examination, the student must pass the final oral qualifying examination covering the proposed field of research and be advanced to candidacy. Finally, a dissertation representing original research in the student's principal field of study must be prepared and defended. The dissertation, conducted under the direction of the doctoral committee, represents the major element in the doctoral program; it must be a significant contribution to the field and is expected to demonstrate critical judgment, intellectual synthesis, and creativity. During the final quarter of graduate study the student is required to defend the dissertation in an oral examination conducted by the doctoral committee.

Admission to the graduate program is by the Dean of Graduate Studies upon recommendation of the Department and is based upon letters of recommendation, Graduate Record Examination scores, previous scholarship, and other qualifications. Applicants should have a broad undergraduate background in both the physical and the biological sciences as well as in mathematics. Since most students will need some additional work in one or more disciplines, the graduate program allows for the correction of minor deficiencies during the first year, as determined by departmental review. Although the program is rigorous, it is also sufficiently flexible to allow for a wide range of interests and objectives.

Application deadline for the fall quarter is June 1 of each year. However, to receive full consideration for financial assistance, fall quarter applications should be completed by February 1. Applica-

tions for the winter and spring quarters will be accepted only under special circumstances.

Additional information on the graduate program in Radiological Sciences is available from the office of the program director; telephone (714) 856-6147.

Graduate Courses in Radiological Sciences

201A-B Fundamentals of Imaging Physics (4-4) F, W. Lecture, three hours. A unified approach to the mathematical and physical properties of medical imaging.

203 Engineering Principles of Radiographic Systems (2) F. Laboratory, six hours. Laboratory in the engineering aspects of radiographic systems and equipment. Prerequisite: consent of instructor.

240 Introduction to Radiation Biology (4) W. Lecture, three hours. An introduction to radiation biology at the molecular, cellular, and tissue level. Relevance of radiation biology to radiation therapy, diagnostic radiology, nuclear medicine, and ultrasound.

252 Principles of Radiation Protection (4) S. Lecture, three hours. Natural and artificial sources of radiation exposure; guides for radiation protection.

255 Laboratory in Radiation Detection and Protection (2) S. Laboratory, six hours. Laboratory in the detection, measurement, and protection of radiation.

260A-B-C Principles of Medical Imaging (4-4-4) F, W, S. Lecture, three hours. The application of various imaging techniques and principles of physics and engineering to medicine. Prerequisites: Radiological Sciences 201A-B and 203.

265A-B-C Laboratory in Medical Imaging (2-2-2) F, W, S. Laboratory, six hours. Laboratory involving the various imaging techniques used clinically or under development.

267 Electronics for Nuclear Magnetic Resonance Instrumentation (2) W. Laboratory, six hours. Laboratory involving the electronic details of NMR imaging.

270A-B Physical Acoustics (4-4) F, W. Lecture, three hours. The physical principles of acoustics and mechanical radiation, especially at ultrasonic frequencies. Topics include radiation fields; propagation in layered media; generation and detection of acoustical waves; ultrasonic propagation in gases, liquids and solids; nonlinear acoustics; environmental, architectural, underwater and medical acoustics; physical models of tissue. Prerequisite: consent of instructor.

272 Detection and Dosimetry of Ionizing Radiation (4) S. Lecture, three hours. Principles and methods of ionizing radiation detection; measurement of energy and intensity; instruments and techniques. Physical basis of radiation dose measurement; exposure and absorbed dose in tissue; dose, dose rate and microdose distributions and biological effectiveness.

288 Principles of Radiopharmaceuticals (3) F. Lecture, two hours. Production of medical radioisotopes, including generator systems. Chemistry, labeling techniques, quality control, and pharmacology of radiopharmaceuticals. Prerequisite: consent of instructor.

290 Seminar in Radiological Sciences (2) F, W, S. Seminar, two hours. Directed review and discussion of recent advances in areas of current interest. Presentations are given by students, faculty, and invited speakers.

292 Independent Study (variable) F, W, S. Individual study or research under the direction of a faculty member.

295A-B-C Clinical Workshop in Radiological Sciences (2-2-2) F, W, S. Laboratory, six hours. Clinical experience in the various areas of radiological sciences including general diagnosis, nuclear medicine, ultrasound, MRI, and interventional vascular work.

298 Master of Science Thesis Research (variable) F, W, S. Individual research under the supervision of a faculty member directed toward completing the thesis required for the M. S. degree in Radiological Sciences.

299 Doctor of Philosophy Dissertation Research (variable) F, W, S. Individual research under supervision of a faculty member directed toward completing the dissertation required for the Ph.D. degree in Radiological Sciences.

Department of Athletics and Physical Education

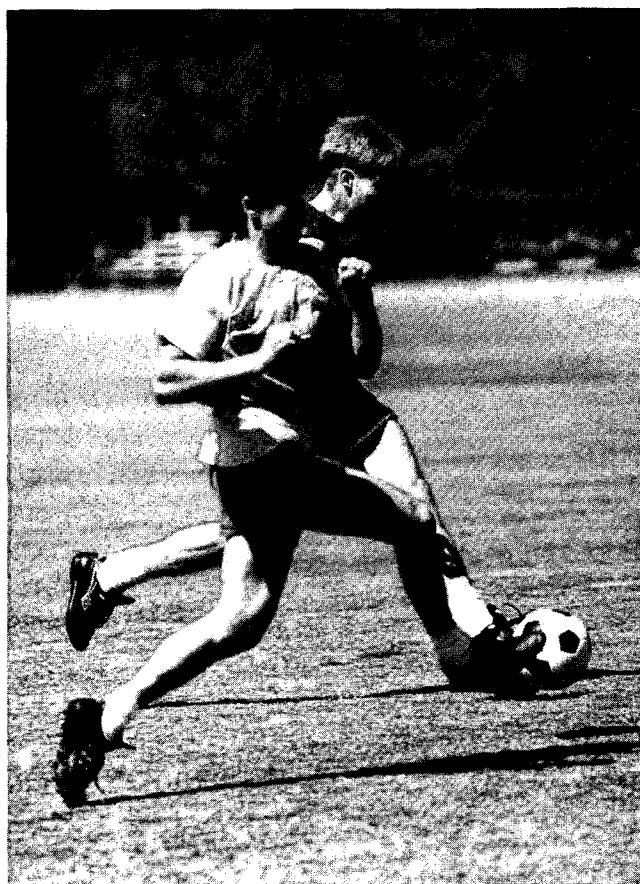
Raymond H. Thornton, **Chair**
1314 Crawford Hall; (714) 856-5425

Faculty

Stephen Ainslie, B.A. University of California, Irvine, *Men's Golf Coach*
John Altobelli, M.S. Azusa Pacific University, *Assistant Baseball Coach*
Bill C. Ashen, *Men's Volleyball Coach*
Jean Ashen, B.S. University of Nevada, Las Vegas, *Assistant Women's Basketball Coach*
Rod Baker, B.A. Holy Cross University, *Men's Basketball Coach*
Michael Bokosky, M.A. California State University, Los Angeles, *Assistant Men's Basketball Coach*
John E. Caine, Ed.D. University of Northern Colorado, *Director Emeritus*
Linda B. Dempsay, M.A. University of California, Berkeley, *Supervisor of Physical Education Emeritus*
Conni Earley, B.A. Fresno State University, *Men's and Women's Diving Coach*
Michael Gerakos, B.S. University of California, Los Angeles, *Men's Baseball Coach*
Peter H. Hofinga, M.S. Baylor University, *Supervisor of Physical Education*
Joyce Ibbetson, M.A. University of Southern California, *Boating Program Director*
Doreen Irish, M.A. California State University, Los Angeles, *Women's Tennis Coach*
Albert M. Irwin, B.A. University of the Pacific, *Supervisor of Physical Education Emeritus*
Derek Lawther, *Men's Soccer Coach*
Dan Lockhart, B.S. University of California, Irvine, *Assistant Men's and Women's Swim Coach*
Myron McNamara, B.A. University of Southern California, *Lecturer in Physical Education Emeritus*
Larry M. Moore, M.S. University of California, Irvine, *Crew Coach*
Edward H. Newland, B.A. Occidental College, *Men's Water Polo Coach*
Vincent F. O'Boyle, M.A. Azusa Pacific University, *Director of Track and Field; Men's and Women's Cross Country Coach*
Gregory P. Patton, B.A. University of California, Santa Barbara, *Men's Tennis Coach*
Jon Pinckney, B.A. University of California, Irvine, *Sailing Coach*
Michael Puritz, B.A. California State University, Long Beach, *Women's Volleyball Coach*
Charles Schober, B.S. Oklahoma University, *Men's and Women's Swim Coach*
Raymond Smith, M.A. United States International University, *Women's Soccer Coach*
Raymond H. Thornton, Ph.D. University of Southern California, *Chair and Supervisor of Physical Education*
Timothy M. Tift, M.A. Pepperdine University, *Lecturer in Physical Education*
Danny B. Williams, B.A. Occidental College, *Women's Track and Field Coach*

The Physical Education instruction program is designed to encourage UCI students to develop a physically active life-style through wholesome participation in sports and exercise, to develop healthful personal habits, and to remain physically active throughout their lifetime. The goal of the program is to assist students in attaining fitness, health, and a sense of well-being which will enhance their University experiences and enable them to participate fully in their academic programs.

The Department's faculty and professional staff are dedicated to instructing students in the skills necessary to effectively participate in a broad program of physical activities, sports, leisure recreational pursuits, and, if appropriate, intercollegiate competition. Special emphasis is placed upon: (1) lifetime activities and sports; (2) teaching the relationship between vigorous physical activity/sports and physical fitness and health; and (3) the acquisition of the skills, knowledge, and motivation to be physically active.



Courses

1A-B-C Physical Education (0.7 per quarter) F, W, S. Beginning, intermediate, and advanced skill levels. May be repeated for credit. Pass/Not Pass Only.

Students may receive a total of 4.2 units of credit for Physical Education courses toward their degree. (A degree program in physical education is not offered.) Courses are arranged within the Department's five program areas: aquatics, conditioning for sports and physical fitness, individual and dual sports, team sports, and lifesaving and water safety card certification instruction.

Courses are offered in adapted physical education, badminton, basketball, bowling, golf, jogging, physical fitness and conditioning, racquetball, ski conditioning, scuba diving, sailing, softball, soccer, swimming, tennis, water safety instructor, volleyball, and weight training. Courses address appropriate warm-up exercises, diet, and nutrition. In addition, seasonal intercollegiate athletic sections in baseball, basketball, crew, cross-country, golf, sailing, soccer, swimming, tennis, track and field, volleyball, and water polo are offered with enrollment by consent of the instructor.

University Officers

The Regents of the University of California

Regents Ex Officio

Governor of California and President of The Regents — Pete Wilson
 Lieutenant Governor of California — Leo T. McCarthy
 Speaker of the Assembly — Willie L. Brown
 State Superintendent of Public Instruction — Bill Honig
 President of the Alumni Association of the University of California — Ralph Ochoa
 Vice President of the Alumni Association of the University of California — Gail Anderson
 President of the University — David P. Gardner

Appointed Regents¹

Glenn Campbell (1996)	Tirso del Junco, M.D. (1997)
Dean A. Watkins (1996)	Leo J. Kolligian (1997)
Yori Wada (1992)	Alice J. Gonzales (1998)
Frank W. Clark, Jr. (2000)	Roy T. Brophy (1998)
Meredith Khachigian (2001)	Clair W. Burgener (2000)
Yvonne Brathwaite Burke (1993)	William T. Bagley (1990)
Jacques S. Yeager (1994)	S. Stephen Nakashima (1992)
Jeremiah F. Hallisey (1993)	Sue Johnson (2002)
Harold M. Williams (1994)	Diana Darnell (7/1/91–6/30/92)

Regents-Designate²

Paul Hall
 Carl Stonely

¹ Except for Regents now completing 16-year terms, and the student Regent and alumni Regents appointed annually by the Regents for a one-year term ending on June 30, Regents now serve a term of 12 years, commencing on March 1. The Governor appoints all Regents except the student Regent. Names are arranged in order of original appointment to the Board.

² One-year terms expiring June 30.

Faculty Representatives to The Regents

Chair — Martin Trow (9/1/91–8/31/92)
 Vice Chair — (9/1/91–8/31/92)

Principal Officers of The Regents

General Counsel — James E. Holst
 Treasurer — Herbert M. Gordon
 Secretary — Bonnie M. Smotony

Officers Emeriti

General Counsel of The Regents, Emeritus — Thomas J. Cunningham
 Associate Counsel of The Regents, Emeritus — John E. Landon
 Treasurer of The Regents, Emeritus — Owsley B. Hammond
 Secretary of The Regents, Emeritus — Marjorie J. Woolman
 Associate Secretary of The Regents, Emeritus — Elizabeth O. Hansen

Office of the President

President of the University — David P. Gardner
 Senior Vice President—Academic Affairs — William R. Frazer
 Senior Vice President—Administration — Ronald W. Brady
 Vice President—Budget and University Relations — William B. Baker
 Vice President—Health Affairs — Cornelius L. Hopper
 Vice President—Agriculture and Natural Resources — Kenneth Farrell
 Special Assistant to the President — Janet E. Young

Officers Emeriti

President of the University, Emeritus; and Professor of Business Administration, Emeritus — Clark Kerr
 President of the University, Emeritus; and Professor of Economics, Emeritus — Charles J. Hitch
 President of the University, Emeritus, and Professor of Physics, Emeritus — David S. Saxon
 Chancellor Emeritus and Professor of Statistics, Emeritus — Albert H. Bowker
 Chancellor Emeritus and Professor of Botany, Emeritus — Vernon I. Cheadle
 Chancellor Emeritus and Professor of Political Science, Emeritus — Ivan H. Hinderaker
 Chancellor Emeritus and Professor of Comparative Government, Emeritus — Dean E. McHenry

Chancellor Emeritus and Professor of Animal Science, Emeritus — James H. Meyer
 Chancellor Emeritus, University Librarian Emeritus, Professor of Anatomy, Emeritus, and Professor of History of Health Sciences, Emeritus — John B. de C. M. Saunders, M.D.
 Chancellor Emeritus, Division of Biology — Robert L. Sinsheimer
 Vice President of the University, Emeritus; Professor of Agricultural Economics, Emeritus; and Agricultural Economist, Emeritus — Harry R. Wellman
 Vice President of the University Emeritus and Professor of Physics, Emeritus — William P. Fretter
 Vice President—Budget Plans and Relations for the University, Emeritus — Thomas E. Jenkins
 Vice President—Financial and Business Management, Emeritus, and Professor of Pathology, Emeritus — Baldwin G. Lamson, M.D.
 Vice President—Physical Planning and Construction, Emeritus — Elmo R. Morgan
 Assistant President, Emeritus — Dorothy E. Everett
 University Auditor, Emeritus — Norman H. Gross
 Special Assistant to the President Health Affairs, Emeritus — Clinton C. Powell, M.D.
 Assistant Vice President, Emeritus — Loren Furtado
 Director of the University Press, Emeritus — August Fruge
 Coordinator, Administrative Policy, Emeritus — Ruth E. Byrne
 Executive Assistant to the President, Emeritus — Gloria L. Copeland

Chancellors

Chancellor at Berkeley — Chang-Lin Tien
 Chancellor at Davis — Theodore Hullar
 Chancellor at Irvine — Jack W. Peltason
 Chancellor at Los Angeles — Charles E. Young
 Chancellor at Riverside — Rosemary Schraer
 Chancellor at San Diego — Richard C. Atkinson
 Chancellor at San Francisco — Julius R. Krevans
 Chancellor at Santa Barbara — Barbara S. Uehling
 Chancellor at Santa Cruz — Robert Bocking Stevens

UCI Principal Administrative Officers

Chancellor — Jack W. Peltason
 Executive Vice Chancellor — L. Dennis Smith
 Associate Executive Vice Chancellor — William H. Parker
 Associate Vice Chancellor Academic Programs —
 Assistant Executive Vice Chancellor Financial Planning — Roy E. Dormaier
 Associate Vice Chancellor Academic Affairs — Manuel N. Gómez
 Assistant Vice Chancellor Administrative Affairs and Academic Personnel — Mary Carol Perrott
 Assistant Vice Chancellor Budget — Lewis L. Bird, Jr.
 Assistant Vice Chancellor—University Ombudsman — R. Ronald Wilson
 Dean of Graduate Studies — Paul S. Sypherd
 Associate Dean of Graduate Studies — Henry N. Pontell
 Dean of Undergraduate Studies — Michael D. Butler
 Director of Land Management — Joseph F. DiMento
 Faculty Assistant for Academic Affirmative Action —
 Faculty Assistant for International Affairs — Eloy Rodriguez
 Special Assistant for Academic Affairs — Lyman W. Porter
 Vice Chancellor Student Affairs and Campus Life — Horace Mitchell
 Associate Vice Chancellor Student Affairs and Campus Life — Charles R. Pieper
 Assistant Vice Chancellor Student Affairs and Campus Life — James B. Craig
 Dean of Students — Sally K. Peterson
 Director of Intercollegiate Athletics — Thomas J. Ford
 Vice Chancellor Administrative and Business Services —
 Associate Vice Chancellor Administrative and Business Services — C. Michael Webster
 Assistant Vice Chancellor Affirmative Action and Equal Opportunity — Davida Hopkins-Parham (Acting)
 Vice Chancellor Health Sciences — Walter L. Henry
 Executive Director of the Medical Center — Mary A. Piccione
 Vice Chancellor Research — Paul S. Sypherd
 Assistant Vice Chancellor Research — Patricia A. O'Brien

Vice Chancellor University Advancement —
Associate Vice Chancellor University Advancement — Kathleen T. Jones

For a complete list of UCI administrative officers, please refer to the *University of California Telephone Directory* or the *UCI Campus and Medical Center Directory*.

University Professors

E. Margaret Burbidge, University Professor
University of California, San Diego

Melvin Calvin, University Professor Emeritus
University of California, Berkeley

Donald Cram, University Professor
University of California, Los Angeles

Gerard Debreu, University Professor
University of California, Berkeley

Amos Funkenstein, University Professor
University of California, Los Angeles

Murray Krieger, University Professor
University of California, Irvine

Julian S. Schwinger, University Professor
University of California, Los Angeles

Glenn Seaborg, University Professor Emeritus
University of California, Berkeley

Jonathon S. Singer, University Professor
University of California, San Diego

Neil Smelser, University Professor
University of California, Berkeley

Edward Teller, University Professor Emeritus
Lawrence Livermore National Laboratory

Charles Townes, University Professor
University of California, Berkeley

Sherwood Washburn, University Professor Emeritus
University of California, Berkeley

John R. Whinnery, University Professor
University of California, Berkeley

Hayden White, University Professor
University of California, Santa Cruz

UCI Endowed Chairs

Daniel G. Aldrich Jr. Chair
Ralph J. Cicerone, Ph.D., Chair and Professor of Geosciences and Professor of Chemistry

Arnold and Mabel Beckman Chair in Laser Biomedicine
Michael W. Berns, Ph.D., Professor of Surgery, Cell Biology, Ophthalmology, and Radiology

Grace Bell Chair in Biochemistry
Masayasu Nomura, Ph.D., Professor of Biological Chemistry, Microbiology and Molecular Genetics, and Biological Sciences

Bren Chairs
Francisco J. Ayala, Ph.D., Founding Director of the Bren Fellows Program and Professor of Ecology and Evolutionary Biology and of Philosophy

F. Sherwood Rowland, Ph.D., Professor of Chemistry

FHP Foundation Distinguished Chair in Health Care Management
Paul J. Feldstein, Ph.D., Professor of Management

Irving H. Leopold Chair in Ophthalmology
Richard H. Keates, M.D., Department Chair and Professor of Ophthalmology

Dorothy Marsh Chair in Reproductive Biology
Philip J. DiSaia, M.D., Professor of Obstetrics and Gynecology and of Radiological Sciences

UCI Presidential Chair
Peter M. Rentzepis, Ph.D., Professor of Chemistry

UCI Distinguished Professors

William E. Bunney, Jr., M.D., Department Chair and Distinguished Professor of Psychiatry and Human Behavior

David Easton, Ph.D., Distinguished Professor Emeritus of Political Science

Harry Eckstein, Ph.D., Distinguished Professor of Political Science

Jack P. Green, Distinguished Professor of History

R. Duncan Luce, Ph.D., Director of the Irvine Research Unit in Mathematical Behavioral Science and Distinguished Professor of Cognitive Sciences

Ricardo Miledi, M.D., Distinguished Professor of Psychobiology

J. Hillis Miller, Ph.D., Distinguished Professor of English and Comparative Literature

Frederick Reines, Distinguished Professor Emeritus of Physics

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.

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. (See Sections 51.16 and 51.28 of the *Policies*.)

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.

(Reprinted from the University of California, Irvine Campus Implementation of the *Interim Policies and Procedures Applying to Campus Activities, Organizations and Students — Part A*.)

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. *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. Copies are available from the Assistant Vice Chancellor—University Ombudsman, located in 255 Administration Building; from the Dean of Students, located in Student Services I, and from the Student Activities Office, located in the UCI Student Center.

Academic Dishonesty

The UCI Academic Senate adopted the following policies on academic dishonesty on June 2, 1988.

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 cheapen the learning experience and its legitimacy not only for the perpetrators but for the entire community. It is essential that UCI students subscribe to the ideal of academic integrity and accept individual responsibility for their work.

All members of the academic community have a responsibility to ensure that scholastic honesty is maintained. Cheating and plagiarism are unfair, demoralizing, and demeaning to everyone.

Faculty members are expected to:

1. Uphold and enforce the principles of academic integrity and explain clearly any qualifications of these principles which may be operative in the classes they are teaching.
2. Minimize opportunities for academic misconduct in their courses.
3. Confront students suspected of academic dishonesty in a way which respects the students' privacy.
4. Afford to students accused of academic misconduct the right to appeal any resulting disputes to disinterested parties for hearing and resolution.

Students are expected to:

1. Refrain from cheating and plagiarism.
2. Refuse to aid or abet any form of academic dishonesty.
3. Notify professors and/or appropriate administrative officials about observed incidents of academic misconduct.

Academic dishonesty includes but is not limited to the following examples:

Cheating

1. Copying from others during an examination.
2. Communicating exam answers with another student 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 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 official 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 impairing the concentration of other students and/or the faculty member.

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 of another.
2. To use a creative production without crediting the source.

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.

The UCI Academic Senate has adopted a statement regarding plagiarism which is published each quarter in the UCI *Schedule of Classes*.

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.

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 alone. When this occurs, it is nevertheless important that a written report of the incident be filed in order 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, will necessarily involve members of the University community in addition to the instructor and accused student. In such cases sanctions described in paragraph 52.130 of *Policies Applying to Campus Activities, Organizations, and Students—Part A* may be administered by the Office of the Vice Chancellor—Student Affairs and Campus Life in addition to academic penalties assessed by a faculty member.

Finally, whenever an accusation of academic dishonesty or a penalty imposed by a faculty member is contested by an accused student, the student must have recourse to an appeal for resolution of the dispute to designated arbitrators or, in the last resort, to a properly constituted review panel. Processes for informal resolution by the Office of the Vice Chancellor—Student Affairs and Campus Life and for formal resolution before a Student/Faculty Board of Review are described in paragraph 52.122 of *Policies*. Additional avenues of appeal are described below.

The procedures outlined here are designed to institute a system that recognizes that many cases of academic misconduct are best resolved solely between the student and faculty member involved, while it provides for appropriate handling of serious and repeated offenses and guarantees a fair hearing to an accused student.

Authority of Faculty Members

When a faculty member has evidence of student academic dishonesty, the faculty member has the authority to impose one or more of the following academic penalties, if possible following a private meeting with the student to present the evidence:

1. Issue a reprimand.
2. Require repetition of the questionable work or examination.
3. Reduce the grade to an F or zero, if appropriate, on the questionable work or examination.
4. Dismiss the student from the course with a failing grade recorded on the student's permanent academic record.

Any such disciplinary action must 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, and (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. The faculty member is strongly encouraged to consult with the Associate Dean

of their school before the letter is drafted. Reference to (or a copy of) the UCI Academic Senate Policies on Academic Dishonesty 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. The academic penalty imposed by the instructor is final unless appealed by the student within 15 calendar days of mailing of the letter. Careful documentation of the incident must be maintained by the faculty member in the event that their actions in the case should later be subject to review.

Responsibilities of the Academic Associate Deans

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, and the Associate Dean will be responsible for identifying serious incidents of academic misconduct perpetrated by students enrolled in that school as they occur. Such serious incidents of academic dishonesty, including all incidents which represent repeated offenses by a student, must be referred by the Associate Dean of the accused student's school to the University Ombudsman who will investigate the incident.

The Associate Dean of an accused student's school is required to notify that student of the appeal process available to students accused of academic dishonesty promptly upon receipt of an instructor's letter reporting faculty-imposed academic sanctions.

Responsibility of the University Ombudsman

Whenever an incident of academic misconduct is referred to the University Ombudsman by an academic Associate Dean, the Ombudsman will investigate the circumstances of the incident following procedures specified under campus policy 52.122 and attempt an informal resolution of the case. In the event that the Ombudsman fails to achieve informal resolution of the matter, the case will be referred to the Dean of Students.

Authority of the Vice Chancellor-Student Affairs and Campus Life

When an incident of academic dishonesty is referred to the Dean of Students by the University Ombudsman, the Dean of Students will convene a Student Discipline and Grievance Review Board (composed of students, faculty, and staff) for formal resolution of the case. Attempts at informal resolution by the Ombudsman and/or the Dean of Students may continue as appropriate until the Board makes its report to the Vice Chancellor-Student Affairs and Campus Life. Formal or informal resolution under the authority of the Vice Chancellor-Student Affairs and Campus Life may result in (1) the withdrawal of all charges against the student, (2) the endorsement of the academic penalties imposed by the faculty member, and (3) the possible imposition of one or more of the sanctions described in policy 52.130, including suspension or dismissal from the University.

Student Appeals

When any student accused of academic dishonesty wishes to contest a sanction imposed by a faculty member, the student may, within 15 calendar days of the mailing of written notification of the academic penalty, submit an appeal in writing to the Associate Dean of the instructor's school. The Associate Dean will promptly attempt to mediate the dispute and reach a resolution. The result of a successful mediation will be reported in writing by the instructor to the student and to the Associate Deans of both the faculty member's school and the student's school. If the mediation process does not succeed within 10 calendar days following appeal of the matter to the Associate Dean of the instructor's school, the matter must be forwarded by the Associate Dean to the Dean of Students for resolution under the procedures of policy 52.00ff.

A student accused of academic dishonesty may, within 30 calendar days of the mailing of the initial letter detailing academic sanctions imposed by a faculty member for an incident of academic dishonesty, appeal the matter in writing to the Dean of Students, who will seek to resolve the dispute under the procedures of policy 52.00ff.

Students accused of academic dishonesty or considering an appeal of academic 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.

Maintenance of Disciplinary Records

Records relating to academic dishonesty will be maintained by the Associate Deans (or corresponding officials) of the several academic units primarily 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 non-recurring infractions do not negatively impact a student's career beyond UCI, any student may petition the Associate Dean of their academic school to have relevant 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.

Acknowledgment

The information above was inspired both in format and content by a University of California, Santa Barbara publication.

The UCI publication *Policies Applying to Campus Activities, Organizations, and Students—Part A* provides additional details about the implementation of procedures specified above. Copies are available from the Office of Student Affairs, 260 Administration Building.

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 January 1988, the Education Code of the State of California was modified to reflect changes to the State's anti-hazing statute. In accordance with the revised Education Code, students are advised of the following:

Education Code 32050

As used in this article, hazing includes any method of initiation or preinitiation into a student organization or any pastime or amusement engaged in with respect to such an organization which causes, or is likely to cause, bodily danger, physical harm, or personal degradation or disgrace resulting in physical or mental harm, to any student or other person attending any school, community college, college, university, or other educational institutions in this state; but the term "hazing" does not include customary athletic events or other similar contests or competitions.

Education Code 32051

No student, or other person in attendance at any public, private, parochial, or military school, community college, college, or other educational institution, shall conspire to engage in hazing, participate in hazing, or commit any act that causes or is likely to cause bodily danger, physical harm, or personal degradation or disgrace resulting in physical or mental harm to any fellow student or person attending the institution.

The violation of this section 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.

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.

Copies of Sections 32050 through 32052 as well as UCI's policies regarding hazing are available from the Office of the Dean of Students, Student Services Building.

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.

The disclosure of information from student records is governed in large measure by the Federal Family Educational Rights and Privacy Act of 1974, 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 with the Department of Health and Human Services regarding alleged violations of the rights accorded them by the Act; and
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.

NOTE: 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 Policies Applying to Campus Activities, Organizations, and Students, Part B, Section 10.721 for a list of exceptions.

Normally, the campus will release the following as personally identifiable information which can be made public:

Student's name;
Address (campus, local, and/or permanent) and telephone numbers;
Date and place of birth;
Major field of study, dates of attendance, degrees and honors received;
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.

However, students have the right to refuse to permit any or all of these categories to be designated public information with respect to themselves. (See the NOTE above.)

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.

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 Assistant Vice Chancellor—University Ombudsman, 255 Administration.

A Personal Data Sheet is included in each quarter's registration packet which allows students to examine and update their personal data. Furthermore, during the eighth week of classes, every student is provided with a record of current term enrollment as part of his or her registration materials for the next quarter to ensure the accuracy of official enrollment. Students are urged to report officially to the Registrar's Office all changes in personal data and enrollment data. It is extremely important for each student to keep the Registrar's Office currently informed as 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 the federal Act. Copies of the Act and University and campus policies are available for review in the Reference Room, Main Library. In addition, University policies are published in *Policies Applying to Campus Activities, Organizations, and Students—Part B*, copies of which are available in the Student Activities Office.

Complaints regarding alleged violation of the rights accorded students by the federal Act may be filed with the Family Educational Rights and Privacy Act Office (FERPA), Department of Education, 4511 Switzer Building, Washington, D.C. 20202.

Types and locations of major student records maintained by the campus are listed in the following table; consult 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
Admissions—Undergraduate	Administration	Director, Admissions
Admissions—Graduate	Administration	Dean, Graduate Studies
Admissions—College of Medicine	Med. Sci. I	Director, Admissions
Career Planning and Placement	Student Services	Director, Career Planning and Placement
Child Care Services	Early Childhood Education Center	Director, Child Care
Counseling Services	Student Services	Director, Counseling
Dean of Students	Student Services	Dean of Students
Disabled Student Services	Disabled Student Center	Director, Disabled Student Services
Education Abroad Program	Student Services	Coordinator, EAP
Educational Opportunity Program	Administration	Coordinator, EOP
Financial Aid	Administration	Director, Financial Aid
Financial Service (Cashier, Collections)	Administration	Manager, Financial Services
Housing	Housing Administrative Services	Director, Housing
International Services	Administration	Assistant Dean, International Students
Learning Skills Center	Student Services	Director, Learning Skills Center
Ombudsman Services	Administration	University Ombudsman
Parking	Public Services Facility	Parking Supervisor
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Student Conduct	Student Services	Dean of Students
Student Health	Student Health Center	Director, Student Health
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Tutorial Assistance Program	Student Services	Director, Tutorial Assistance Program
Undergraduate Studies Studies	Administration	Dean, Undergraduate
University Extension	University Extension Facility	Dean, University Extension
Veterans	Administration	Coordinator, Veterans Student Services
Incidental Records (minutes of various committees, copies of correspondence in offices not listed above, and other records not listed)	Administration	Vice Chancellor Student Affairs, or other Student Affairs official

Salary and Employment Information

Field of Study	Degree Level of Graduates		
	Bachelor's	Master's	Doctorate
	Average Monthly Salary *		
Engineering	\$2,457	\$2,942	\$4,209
Humanities	1,619	1,969	2,038
Life Sciences	1,636	2,252	3,236
Management	—	3,338	4,388
Physical Sciences	1,906	2,710	3,022
Social Sciences	1,644	2,093	2,672

* Source: A national survey of a representative group of colleges conducted by the College Placement Council, representing the 80 percent range of offers for January, 1990 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.

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Inquiries regarding the University's equal opportunity policies may be directed to Davida Hopkins-Parham, Acting Assistant Vice Chancellor, Affirmative Action and Equal Opportunity, 524 Administration Building, University of California, Irvine, CA 92717; telephone (714) 856-5594.

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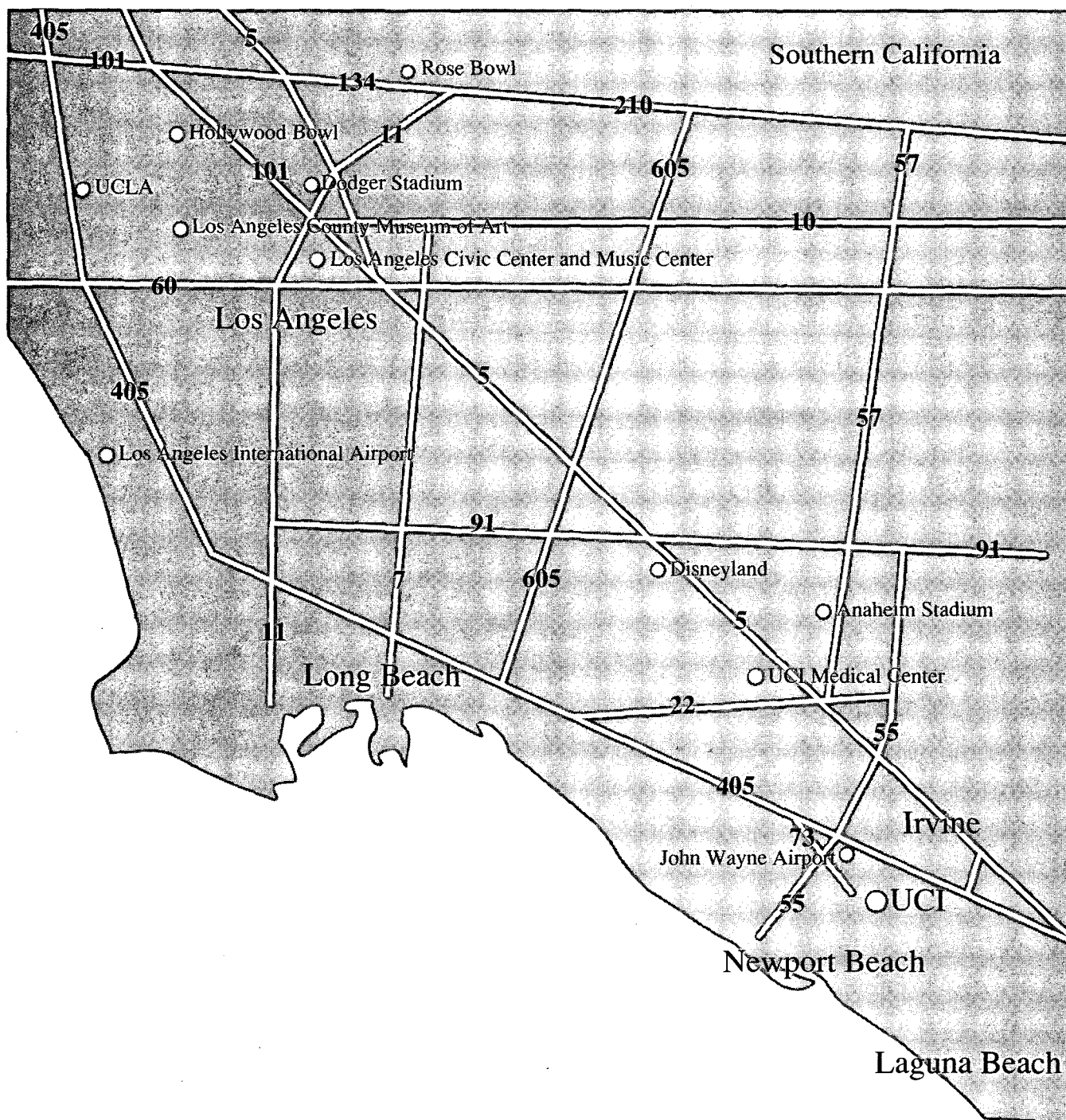
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**School of
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Sciences**

**School of
Fine Arts**

**School of
Humanities**

**School of
Physical Sciences**

**School of
Social Sciences**

**Department of
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**Program in
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Physical
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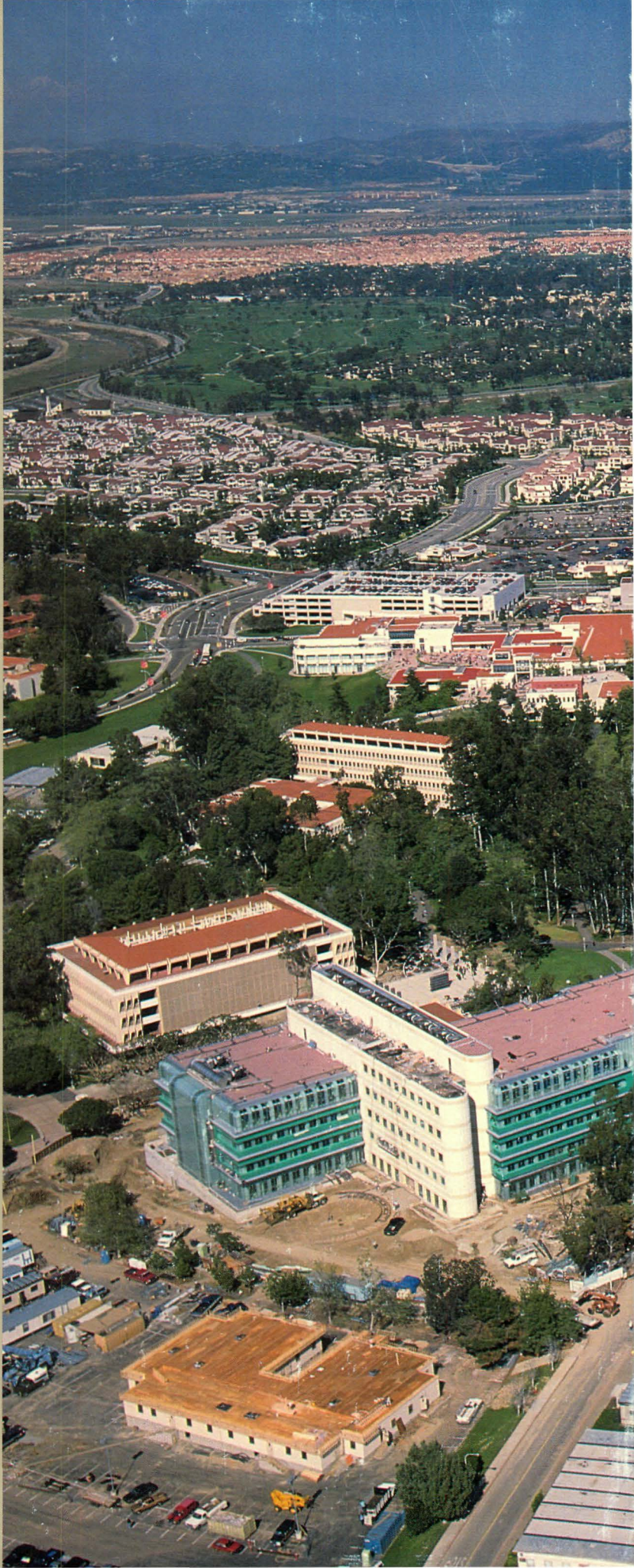
Correspondence Directory

University of California, Irvine, CA 92717

Campus directory assistance: (714) 856-5011

Speech and hearing impaired persons: TDD (714) 856-6272

Office	Location	Telephone (714)
Admissions		
College of Medicine	E108 Medical Sciences I	856-5388
Graduate	145 Administration Building	856-6761
Undergraduate	245 Administration Building	856-6703
Associated Students	Student Center	856-5547
Bookstore, University	Student Center	725-2665
Career Planning and Placement	Student Services I	856-6881
Dean of Students	Student Services I	856-5590
Disabled Student Services	Trailer Complex	856-7494
Educational Opportunity Program	202 Administration Building	856-7484
Financial Aid	102 Administration Building	856-6261
Housing, Community	209 Administration Building	856-7247
Housing, On-Campus	Housing Administrative Services	856-6811
International and Nontraditional Student Services	201 Administration Building	856-7249
Reentry Student Services	204 Administration Building	856-5518
Registrar	215 Administration Building	856-6124
Relations with Schools and Colleges	205 Administration Building	856-5518
Student Health	Student Health Center	856-5301
Summer Sessions	University Extension	856-5493
Transfer Student Services	204 Administration Building	856-7821
UCI Medical Center	101 The City Drive Orange, CA 92668	634-6011
Veterans Student Services	209 Administration Building	856-6477
Vice Chancellor Student Affairs	260 Administration Building	856-7253



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