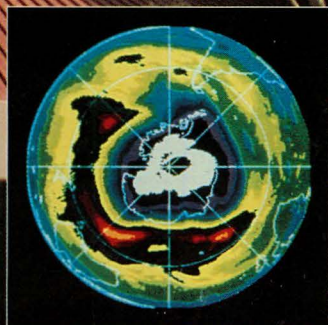
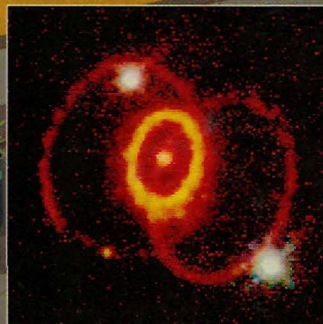


1996-97  
GENERAL  
CATALOGUE

1995 NOBEL LAUREATES  
F. REINES PHYSICS F.S. ROWLAND CHEMISTRY



*"UCI is that rarely  
found mixture of youth  
and experience, wisdom  
and innovation."*

Laurel L. Wilkening  
UCI Chancellor

UCI  
University of California, Irvine



## 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 two steps: payment of fees and enrolling in classes. Medical students should consult the College of Medicine Office of Admissions for the College of Medicine calendar.

### Fall Quarter, 1996

Quarter Begins .....	Sept. 24 (Tues.)
Academic Advising and Orientation .....	Sept. 24-27 (Tues.-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. 25-Jan. 1 (Wed.-Wed.)

### Winter Quarter, 1997

Quarter Begins .....	Jan. 2 (Thur.)
Academic 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. 14 (Fri.)
Final Examinations .....	Mar. 17-21 (Mon.-Fri.)
Quarter Ends .....	Mar. 21 (Fri.)
Spring Administrative Recess .....	Mar. 24 (Mon.)

### Spring Quarter, 1997

Quarter Begins .....	Mar. 26 (Wed.)
Academic Advising and Orientation .....	Mar. 26-28 (Wed.-Fri.)
Instruction Begins .....	Mar. 31 (Mon.)
Memorial Day Holiday .....	May 26 (Mon.)
Instruction Ends .....	June 6 (Fri.)
Final Examinations .....	June 9-13 (Mon.-Fri.)
Commencement .....	June 14 (Sat.)
Quarter Ends .....	June 14 (Sat.)

### Summer Sessions, 1997

Session I .....	June 23-July 30 (Mon.-Wed.)
10-Week Session .....	June 23-Aug. 29 (Mon.-Fri.)
Session II .....	Aug. 4-Sept. 10 (Mon.-Wed.)

The *UCI General Catalogue* is available in alternative formats, including Braille, large print, cassette tape, and computer disk, for persons with print disabilities. Information is available from the Office of Disability Services; telephone (714) 824-7494 (voice), 824-6272 (TDD).

**How to use the *Catalogue*:** See page 20.

**How to obtain the *Catalogue*:** See the inside back cover.

### On the Cover

If one had to imagine the best thing that could happen to a young university, it would be exactly what happened to UCI on October 11, 1995. Nobel Prizes in physics and chemistry were awarded to two UCI faculty members, a feat that has never been achieved in the same year throughout the history of the UC system, and is quite rare in the history of the Nobel Prize.

The honors were long overdue for Frederick Reines and F. Sherwood Rowland, two of UCI's—and the nation's—most accomplished scientists.

—Chancellor Laurel L. Wilkening

### Cover Photographs

**Physical Sciences II.** Information about the School of Physical Sciences, home of UCI's Nobel Laureates, begins on page 273. (*Photo credit: Laurel Hungerford*)

*Photo inserts, from left to right:*

**Supernova 1987A.** This Hubble Space Telescope image shows rings of glowing gas surrounding the site of an exploded star. Neutrinos were detected from this supernova in 1987 by the IMB and Kamiokande

detectors in the U.S. and Japan. Professor Frederick Reines was spokesperson for the IMB experiment at that time. Years earlier, Professor Reines demonstrated experimentally the existence of the neutrino, an elusive subatomic particle that changed theories about the nature of the universe. (*Photo credit: Nasa/STScI*)

**The Blue Planet.** The Apollo 17 crew saw this view of Earth while traveling toward the moon. UCI students interested in learning about the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on Earth should investigate the minor in Global Sustainability; see page 261. (*Photo credit: National Space Science Data Center*)

**Hole in the ozone layer.** This satellite spectrometer image showing ozone depletion was taken at the South Pole on October 5, 1987. Professor F. Sherwood Rowland brought to the world's attention the destructive reaction between chlorofluorocarbons and our planet's precious ozone layer.

*For more information about UCI's Nobel Laureates, see pages 6-7.*

*Special thanks to Professor Peter Bryant for providing inspiration for this cover.*



---

# **1996-97 GENERAL CATALOGUE**

**UNIVERSITY OF CALIFORNIA, IRVINE**



# TABLE OF CONTENTS

## INTRODUCTION TO UCI

<b>The University of California</b> .....	4
<b>The Irvine Campus</b> .....	4
From the Chancellor 5	
UCI 1995 Nobel Laureates 6	
Academic Goals; Academic Structure; Accreditation 9	
Office of Affirmative Action and Equal Opportunity 9	
Office of the Assistant Executive Vice Chancellor-University Ombudsman 10	
The Campus Setting 10	
Instructional and Research Facilities 10	
University Libraries; Instructional Development Services; Media Services; Office of Academic Computing; Irvine Ecological Preserve; Natural Reserves System; UCI Arbore- tum; Laser Microbeam and Medical Program; Thesaurus Lin- guae Graecae; UCI Medical Center and Community Clinics; Center for Occupational and Environmental Health	
Office of University Advancement 13	
UCI Academic Senate Distinguished Faculty 14	

## PREADMISSION MATTERS

<b>How to Use the Catalogue</b> .....	20
<b>Office of Admissions and Relations with Schools</b> .....	20
<b>Special Opportunities</b> .....	21
Educational Opportunity Program; Center for Educational Part- nerships; Celebrate UCI; University Program for High School Scholars	
<b>Undergraduate and Graduate Degrees and Areas of Study</b> .....	22
<b>Majors and Careers</b> .....	26
<b>Special Programs</b> .....	31
Educational Opportunity Program; Center for Educational Part- nerships; Student Academic Advancement Services; Graduate and Professional Opportunity Program; Medical Student Support Programs	
<b>Expenses and Fees</b> .....	32
<b>Financial Aid</b> .....	36
Scholarships; Grants 38	
Loans 39	
Federal College Work-Study; Aid for International Students 40	
Aid for Students with Disabilities; Student Employment 40	
<b>Undergraduate Admissions</b> .....	41
Categories of Application 41	
Admission as a Freshman Applicant 41	
Admission to the University Program for High School Scholars 44	
Admission as a Transfer Applicant 44	
Nonresident Admission Requirements 46	
Advanced Placement Credit; International Baccalaureate 49	
Application Procedures 49	

## INFORMATION FOR ADMITTED STUDENTS

<b>Orientation</b> .....	52
<b>Division of Undergraduate Education</b> .....	52
Placement Testing 52	
Subject A Examination; Academic Advising 53	
Undecided/Undeclared Students 53	
Program of Academic Support Services 53	

Student Academic Advancement Services; Honors Opportunities 54	
Center for International Education 55	

## Requirements for a Bachelor's Degree .....

Catalogue Rights; University Requirements 57	
UCI Requirements; Breadth Requirement 58	
School, Departmental, and Major Requirements 61	
Minor Programs; Application for Graduation 61	

## Information for Transfer Students: Fulfilling

<b>Requirements for a Bachelor's Degree</b> .....	62
Transfer Students: Completion of the UCI Breadth Requirement 62	
Intersegmental General Education Transfer Curriculum 62	
Transferability of Credit 63	

## Enrollment and Other Procedures .....

Enrollment and Payment of Fees 65	
Part-Time Status; Lapse of Status 66	
Retention of Student Records; Transcript of Records 66	
Verification of Student Status; Cancellation/Withdrawal 66	
Readmission; Intercampus Visitor 67	
California Residence; Commencement 67	

## Academic Regulations and Procedures .....

Student Academic Records; Grading System 68	
Credit by Examination; Independent Study 70	
Final Examinations; Student Copies of Quarterly Grades 70	
Undergraduate Scholarship Requirements 70	
Graduate Scholarship Requirements 72	
Enrollment in University Extension 72	
Credits from Other Institutions or University Extension 72	

## Supplementary Educational Programs .....

Summer Session; University Extension; Program in English as a Second Language; ROTC	
--	--

## Major Campus Publications .....

<b>Life on Campus</b> .....	74
UCI Bookstore; Bren Events Center 74	
Career and Life Planning Center 74	
Child Care Services; Counseling Center; Dean of Students 75	
Health Education; Housing 77	
UCI Student Center 78	
Student Government 79	
Student Health Service 80	

## Intercollegiate Athletics and Campus Recreation .....

## RESEARCH AND GRADUATE STUDIES

<b>Research</b> .....	82
Office of University/Industry Research and Technology 82	
University of California Humanities Research Institute 82	
Organized Research Units 83	
Irvine Research Units 85	
Focused Research Programs 86	
<b>Graduate Education</b> .....	87
Admission to Graduate Standing 87	
Application Procedures; Required Supporting Documents 87	
Admission and Registration; Limited Status; Academic Advising 88	
Academic Policies 89	
Graduate Degrees 91	
Financial Assistance for Graduate Students 92	



**SCHOOLS, DEPARTMENTS, AND PROGRAMS**

<b>School of the Arts</b> .....	94
Arts Interdisciplinary	95
Dance	96
Drama	101
Music	105
Studio Art	112
<b>School of Biological Sciences</b> .....	117
Developmental and Cell Biology	132
Ecology and Evolutionary Biology	134
Molecular Biology and Biochemistry	135
Psychobiology	136
Anatomy and Neurobiology	138
Biological Chemistry	140
Microbiology and Molecular Genetics	141
Physiology and Biophysics	141
<b>Department of Education</b> .....	143
<b>School of Engineering</b> .....	151
Chemical and Biochemical Engineering	161
Civil and Environmental Engineering	165
Electrical and Computer Engineering	173
Mechanical and Aerospace Engineering	180
<b>School of Humanities</b> .....	188
Art History	190
Classics	194
East Asian Languages and Literatures	197
English and Comparative Literature	202
Film Studies	208
French and Italian	209
German	213
History	216
Special Programs	223
Philosophy	227
Russian	232
Spanish and Portuguese	234
<b>Department of Information and Computer Science</b> .....	240
Undergraduate Program	241
Graduate Program	243
<b>Interdisciplinary Studies</b> .....	250
African-American Studies	250
Asian American Studies	250
Chicano/Latino Studies	251
Global Peace and Conflict Studies	252
History and Philosophy of Science	253
Latin American Studies	253
Transportation Science	254
Women's Studies	255
Global Sustainability	261
Native American Studies	261
Religious Studies	262
<b>Graduate School of Management</b> .....	263
<b>School of Physical Sciences</b> .....	273
Chemistry	274
Earth System Science	281
Mathematics	283
Physics and Astronomy	289
<b>School of Social Ecology</b> .....	297
Criminology, Law and Society	302
Environmental Analysis and Design	304
Psychology and Social Behavior	308

Urban and Regional Planning	312
Graduate Programs	312

<b>School of Social Sciences</b> .....	322
Anthropology	327
Cognitive Sciences	332
Economics	338
Geography	343
Linguistics	344
Politics and Society	348
Undergraduate Major in Social Science	355
Sociology	359
Graduate Program in Social Sciences	363
<b>College of Medicine</b> .....	369
College of Medicine Faculty	369
The M.D. Program	378
Admission	378
The M.D. Curriculum	380
Postgraduate Educational Programs	385
Graduate Academic Programs	387

**APPENDIX**

University Officers	396
University Professors; UCI Nobel Laureates	397
UCI Endowed Chairs; UCI Distinguished Professors	397
Faculty Membership in Learned Societies	398
UCI Academic Senate Distinguished Faculty	398
Principles of Community	398
Student Conduct and Discipline; Academic Dishonesty	399
Anti-Hazing Compliance	400
Computer-Use Policy; Student Records	401
Salary Information; Graduation Rates	403
Crime within the UCI Community	403
Nondiscrimination and Affirmative Action Statements	404
Index	405
Maps	413
How to Obtain a Catalogue, Inside back cover	
Correspondence Directory, Inside back cover	

## University of California, Irvine

### 1996-97 General Catalogue

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

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





# THE UNIVERSITY OF CALIFORNIA

Richard C. Atkinson, **President**

**T**he 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 19 Nobel laureates. National Academy of Sciences 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 National 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 policy-making 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. The names of University Regents, Officers, and Chancellors are presented in the Appendix.

## THE IRVINE CAMPUS

Laurel L. Wilkening, **Chancellor**

The University of California, Irvine (UCI) opened in 1965 with 116 faculty and 1,589 students. In the succeeding 31 years, 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.

UCI is among the leading research universities in the United States. In 1994-95, UCI received more than \$126 million from federal and state agencies and private organizations for the support of the teaching, research, and public service missions of the University. 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 most up-to-date available.

UCI is committed to the pursuit and transmission of knowledge. It makes available to its 17,280 students (13,830 undergraduate, 2,280 graduate, and 1,170 health sciences students and medical residents) opportunities for gaining knowledge, training, skills,



## FROM THE CHANCELLOR

Dear Colleagues:

Welcome to UCI. It is my pleasure to introduce you to a campus of great achievements. In its short history UCI has emerged as a major research university with many innovative academic programs. As part of the largest public university system acclaimed throughout the world for its teaching, research, and public service excellence, UCI is that rarely found mixture of youth and experience, wisdom and innovation. Those qualities are serving us well as we head into a new century and a new era of achievement for UCI.

In 1994 we set the goal to be ranked among the top 50 universities in the country by the year 2000. To my great pleasure, 20 of our 24 ranked Ph.D. programs placed well within the top 50. And the 1995 awarding of two Nobel Prizes to founding faculty members in Physics and Chemistry has never before happened at a public university. These achievements have propelled us inexorably toward the top 30.

The reason is clear. This campus has managed to achieve a remarkable excellence among our scientific, humanistic, and cultural treasures. Virtually every school is distinguished for its faculty and its achievements.

How have we arrived at such an enviable position for a campus barely three decades old? It stems from the foresight of UCI's founders. They recruited talented young faculty who advanced the educational goals of this growing university. In so doing, our faculty have become national leaders by shaping new ideas and revolutionizing our knowledge of the world. Following this tradition, we continue to recruit young promising faculty who complement the wisdom and experience of our prominent researchers and teachers.

In this edition of the *General Catalogue*, we honor not only our Nobel Laureates, but also the recipients of the 1995-96 UCI Academic Senate Distinguished Faculty Awards. Our Nobel Laureates are featured on the next two pages, followed on pages 14-19 by messages from some of our outstanding faculty.

So what does this mean to those of you who commit to a UCI education? It means the commitment to excellence I mentioned earlier. UCI attracts some of the brightest students in the country, who come to us full of potential. We are committed to a quality undergraduate experience and offer our students every opportunity to fulfill the goals they have set for themselves.

Our students are succeeding because the university has made education—the growth and dissemination of knowledge—the center of our universe. In choosing UCI you have begun an educational journey toward the global society of the twenty-first century. I look forward to the exciting, rewarding moments ahead as we make that journey together.

Sincerely yours,

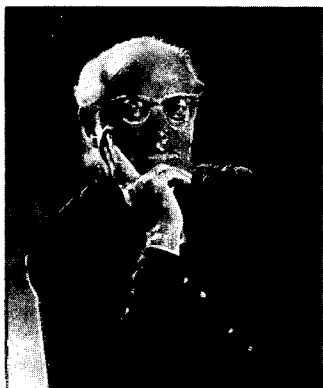


Laurel L. Wilkening  
Chancellor





# 1995 NOBEL LAUREATE IN PHYSICS



## FREDERICK REINES

*UCI Distinguished Professor Emeritus of Physics*

The 1995 Nobel Prize in Physics was awarded to Frederick Reines “for the detection of the neutrino,” a feat that Reines achieved in the mid-1950s together with his Los Alamos Scientific Laboratory colleague, Clyde Cowan. The neutrino had been postulated by Wolfgang Pauli, over 20 years earlier, as a means of preserving fundamental conservation laws in radioactive decays of nuclei, in particular, the conservation of energy and angular momentum. Enrico Fermi suggested the name “neutrino” (i.e., “little neutral one”), to distinguish it from the neutron, and formulated a successful theory of weak nuclear processes with the neutrino as a central participant. The neutrino was postulated to have no electric charge and no (or very little) mass, and was predicted to be able to penetrate vast distances through matter without undergoing collisions. This made the prospect of actually detecting the elusive particle much too remote for most physicists to contemplate.

There the matter stood until Reines and Cowan, starting at a nuclear reactor in Hanford, Washington, and later moving to the new Savannah River Plant reactor in South Carolina, performed their definitive and ground-breaking experimental detection. In addition to resolving and clarifying the highly unsatisfactory status of a fundamental particle which was needed for the consistency of theory, but which was virtually unobservable, this feat also demonstrated the possibility and practicality of doing “neutrino physics,” thus opening the door to the use of neutrinos as a sensitive probe of elementary particles.

Indeed, a few years after the seminal work of Reines and Cowan, physicists began to use neutrinos regularly to investigate the weak interactions, the structure of protons and neutrons and the properties of their constituent quarks. These investigations have used accelerator-produced neutrinos, as well as the reactor and cosmic ray neutrinos which Reines continued successfully to use.

Following the first detection, Reines’ extraordinarily productive career became firmly identified with neutrino physics, as he proceeded to devote the major part of his research to the understanding of the neutrino’s properties and its interactions. His studies produced many fundamental findings and “firsts,” including the first detection of neutrinos from a supernova, which occurred in 1987, confirming the central role played by neutrinos in stellar processes. The latter observation is considered to have signaled the birth of a new field, “neutrino astronomy.”

Reines received his undergraduate degree (M.E.) in engineering (1939) and his M.S. degree in mathematical physics (1941) at the Stevens Institute of Technology, and his Ph.D. degree in theoretical physics (1944) at New York University. Even before completing the writing of his dissertation, he was recruited as a staff member in the Theoretical Division at Los Alamos to work on the Manhattan Project. About a year after he arrived he became a group leader in the Theoretical Division and, later, the director of Operation Greenhouse, which consisted of experiments on Eniwetok atoll. In 1958 he was a delegate to the Atoms for Peace conference in Geneva. He left Los Alamos in 1959 to become Professor and Head of the Department of Physics of the Case Institute of Technology, where he formed his “Neutrino Group.” In 1966 he came to UCI as the first Dean of Physical Sciences, bringing his Neutrino Group with him.

Reines’ distinguished career has been recognized by his peers. He is a member of the National Academy of Sciences, a Fellow of the American Academy of Arts and Sciences, and a Foreign Member of the Russian Academy of Sciences. He has been a Guggenheim Fellow, an Alfred P. Sloan Fellow, and has won the J. Robert Oppenheimer Memorial Prize, the Michelson-Morley Award, the Franklin Medal, the W.K.H. Panofsky Prize, and the National Medal of Science, in addition to a host of other awards, prizes, and distinguished lectureships.

---

# 1995 NOBEL LAUREATE IN CHEMISTRY

## F. SHERWOOD ROWLAND

*Bren Research Professor of Chemistry and Earth System Science*

F. Sherwood Rowland was awarded the 1995 Nobel Prize in Chemistry for his work in atmospheric chemistry, particularly concerning the formation and decomposition of ozone. Rowland shares the prize with former UCI colleague Mario Molina, who is a professor at the Massachusetts Institute of Technology, and Paul Crutzen, a professor at the Max-Planck-Institute for Chemistry in Germany and an adjunct professor at UC San Diego's Scripps Institution of Oceanography. The Nobel Committee praised the three researchers for "contributing to our salvation from a global environmental problem that could have catastrophic consequences."

Rowland and Molina published a landmark report in 1974 that described the threat to the ozone layer from chlorofluorocarbon (CFC) gases used in aerosol spray cans, refrigerators, and plastic foams. In the late 1970s their work led to a ban on the use of CFCs in aerosol cans in the United States, Canada, and Scandinavia.

In 1987 the United Nations created an international protocol on the protection of the ozone layer. Under the most recent tightening of the protocol, the most dangerous ozone-destroying gases have been totally banned from 1996 forward. The ozone layer should gradually begin to heal after the turn of the century, but the healing process will require most of the twenty-first century.

Rowland received his B.A. degree from Ohio Wesleyan University in 1948, and his M.S. and Ph.D. degrees from the University of Chicago in 1951 and 1952, respectively, under the direction of Willard Libby. His work at this time involved carbon-dating.

In 1964 Rowland came to UCI as the first Chair of the Department of Chemistry. His work here began in the area of chemical reaction kinetics, and he is now involved in many studies concerned with the concentrations of trace gases in the upper atmosphere.

Rowland's investigation of the impact of methane gas on the atmosphere has shown that the atmospheric concentrations have been increasing steadily at about one percent per year since 1978. The excess release of methane is contributing to the "greenhouse effect," the gradual warming of the earth's surface.

Rowland is a member of the National Academy of Sciences, the American Academy of Arts and Sciences, the American Association for the Advancement of Science, and the American Philosophical Society. From 1982 to 1984 he served on a White House committee to evaluate the problem of acid rain. Rowland's many awards include the prestigious Japan Prize in Environmental Science and Technology received in 1989. In 1992 he served as President of the American Association for the Advancement of Science, and since 1994 he has been the Foreign Secretary of the National Academy of Sciences.





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, and programs, which are described briefly below, and in its formal research units, which are described in the Research and Graduate Studies section.

The **School of the Arts** teaches the creative as well as the academic and critical dimensions of the arts. It is concerned with the vitality of the arts in society. Faculty energies are directed toward the refinement, enhancement, and encouragement of students' artistic and creative talents and toward the development of the students' understanding of related theory and history. The School offers programs which emphasize extensive studio and workshop experiences, essential theoretical and historical background studies, and exercises in criticism. There are 610 students in the School, including 510 undergraduate and 100 graduate.

The **School of Biological Sciences** is one of the campus' larger academic units, with 3,600 students (3,410 undergraduate and 190 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 **Department of Education**, with 130 students, offers an Ed.D. in Educational Administration and credential programs for current and prospective teachers and administrators in California's public elementary and secondary schools. A focus of the Department's research and instructional programs is educational technology. In addition, the teaching credential programs are enriched by an emphasis on literacy, multicultural perspectives, and modalities of learning. The Department is recognized throughout California for its leadership in the development of exemplary programs to improve education in grades K–12.

The **School of Engineering** focuses on the analysis and design of physical systems applying modern scientific principles to the development of technology for society. The School has 1,360 students, of which 1,010 are undergraduate and 350 are graduate students. The major research disciplines are aerospace, biochemical, chemical, civil, computer, electrical, environmental, materials science, and mechanical engineering. Research issues include biochemical and bioreactor engineering, earthquake engineering, water resources, transportation, parallel and distributed computer systems, intelligent systems and neural networks, image and signal processing, opto-electronic devices and materials, fluid mechanics, combustion and jet propulsion, materials processing, robotics, and modern control theory.

The **School of Humanities** faculty 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 1,640 students, including 1,270 undergraduate and 370 graduate.

The **Department of Information and Computer Science (ICS)** has 770 students (660 undergraduate and 110 graduate). ICS faculty, together with the students, are actively engaged in research and teaching in artificial intelligence, especially neural networks, machine learning, and automated reasoning; computer systems design, including computer-aided design, hardware-software code-sign and rapid system prototyping, optimizing compilers, parallel processing, and networks; issues in computing, organizations, policy, and society, including computer-supported cooperative work and human-computer interaction; software, including software environments, process, metrics, testing, analysis, and user interfaces; biomedical computing; and theory of design and analysis of algorithms and data structures, including graph algorithms, scheduling and resource allocation, and computational geometry.

UCI's **Interdisciplinary Programs (IDPs)** provide students with opportunities to pursue subject areas which derive from the interaction of different disciplines. The IDPs are African-American Studies, Asian American Studies, Chicano/Latino Studies, Global Peace and Conflict Studies, History and Philosophy of Science, Latin American Studies, Transportation Science, and Women's Studies.

Faculty in the **Graduate School of Management** are involved in studies of organizational behavior, information technology, finance, marketing, real estate, managerial economics, accounting, decision sciences, operations management, strategy, public policy, and health care management. The School has 220 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 Executive M.B.A. Program, the Health Care Executive M.B.A. Program, and the Fully Employed M.B.A. Program have a total of 290 students.

The **School of Physical Sciences** has a student body of 1,260 (970 undergraduate and 290 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 **School of Social Ecology**, a multidisciplinary unit established in 1970, is unique to UCI. The School's central objectives are the application of scientific methods to the analysis and resolution of societal problems and the development of theory and knowledge pertinent to environmental and social phenomena. Among issues of long-standing interest are crime and justice in society, social influences on human development over the life cycle, and the effects of the physical environment on health and behavior. There are 1,770 students in the School, including 1,650 undergraduate and 120 graduate.

The **School of Social Sciences**, with 2,830 students (2,600 undergraduate and 230 graduate), is one of the larger academic units at UCI. The faculty, several of whom are nationally recognized, has expertise in a wide range of specific social science topics, for example, 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; 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.

The **UCI College of Medicine** has 1,170 students (390 medical, 660 resident-physicians and fellows, and 120 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. 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. The academic units are the School of the Arts, School of Biological Sciences, Department of Education, School of Engineering, School of Humanities, Department of Information and Computer Science, Interdisciplinary Programs, Graduate School of Management, School of Physical Sciences, School of Social Ecology, School of Social Sciences, and the College of Medicine.

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 Division of Undergraduate Education, 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 Services 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 UCI Bookstore, the Career and Life Planning Center, and the Counseling Center. The Division also includes the Center for Educational Partnerships as well as the Office of Admissions and Relations with Schools and the Office of the Registrar. The Division also provides services for students with disabilities, international students, and veterans; supports the Center for Women and Gender Education, the Lesbian, Gay, and

Bisexual Resource Center, and the Cross-Cultural Center; and places special emphasis on encouraging students to participate actively in their University experience.

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

The 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, graduate 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 majors in Aerospace, Chemical, Civil, Computer, Electrical, and Mechanical Engineering offered by the Departments of Chemical and Biochemical, Civil and Environmental, 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, and is a member of the University/Resident Theatre Association (U/RTA); the Graduate School of Management is accredited by the American Assembly of Collegiate Schools of Business; and the credential programs of the Department of Education are approved by the Commission on Teacher Credentialing.

## Office of Affirmative Action and Equal Opportunity

The UCI Office of Affirmative Action and Equal Opportunity provides consultation to the campus and UCI Medical Center on the interpretation and application of both UCI policy and federal and state laws regarding equal opportunity and affirmative action. It also develops and monitors UCI's affirmative action plan as required by federal regulation for staff and faculty.

The Office investigates and provides assistance in the resolution of discrimination complaints, including sexual harassment, brought by students, faculty, and staff. In addition, as a means of promoting awareness and support of the University's commitment to diversity, the Office offers a variety of staff and faculty career development programs, as well as various workshops.

The Office is located in 524 Administration Building; telephone (714) 824-5594.



## Office of the Assistant Executive Vice Chancellor-University Ombudsman

The Assistant Executive Vice Chancellor-University Ombudsman is available to assist students, faculty, staff, and visitors with problems or concerns they may encounter while on the UCI campus. The Assistant Executive Vice Chancellor-University Ombudsman responds to individual grievances or group petitions by clarifying issues; making appropriate on- and off-campus referrals; and providing a confidential, impartial, and informal setting for mediation, dispute resolution, or conflict negotiation. The Office is located in 255 Administration Building; telephone (714) 824-7256.

## 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 multinational business and industrial complex.

The campus itself is 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 non-migratory waterfowl and other wildlife.

The Western Center of the American Academy of Arts and Sciences is located on the campus and the Arnold and Mabel Beckman Center of the National Academies of Sciences and Engineering is adjacent to the campus. 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.

University Town Center, a commercial center linked to the campus by a pedestrian bridge, includes apartments, a movie theater complex and comedy nightclub, a post office, restaurants, and various shops and businesses. Also nearby are major department stores, award-winning restaurants featuring a wide variety of international cuisines, and major hotels and resorts. 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 enhances year-round water-oriented activities such as swimming, surfing, windsurfing, sailing, and tidepooling. Local mountain and desert recreation areas are within easy reach and 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, the UCI Medical Center, and major housing areas, shopping centers, and beaches is convenient. In addition, 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 LIBRARIES

Joanne R. Euster, *University Librarian*

Established in 1963, the UCI Libraries serve the information needs of students, faculty, staff, and community members at three major library facilities, the Main and Science Libraries on the Irvine campus and the Medical Center Library in Orange. The collection, carefully selected and developed in conjunction with the campus academic plan, is augmented by the 26-million-volume collections of the University of California library system, several systemwide

cooperative acquisitions programs, and access to a growing number of electronic resources.

The UCI Libraries have more than 1.5 million volumes and approximately 17,500 active serial subscriptions that are available for study, teaching, and research. With the exception of certain special units, all books and periodicals are on open shelves and easily accessible to users. In addition, campus users may request library materials, including periodical articles, from other libraries around the world.

Technology has dramatically changed the way a research library acquires, processes, and makes available information. Modern methods for increasing the speed and efficiency of library services are in evidence throughout the UCI Libraries. The Libraries subscribe to a computer-based cataloging service that enables them to make materials available rapidly. UCI has its own local computerized system, ANTPAC (the Anteaters Public Access Catalog), that provides information about books, periodicals, and other materials at UCI, including whether an item is checked out, on-order, or in-process. The Libraries also provide access to a growing number of databases in CD-ROM format. In addition to local, in-house systems, the MELVYL® Online System connects users at UCI with the vast resources of the nine-campus University of California library system, as well as a growing number of bibliographic, abstracting, and full-text databases.

The UCI Libraries conduct an active instruction program to help users become familiar with rapidly expanding information resources and technologies. The program includes a formal course in library research techniques (Humanities 75, Library Research Methods), course-related and course-integrated instruction, instruction in the use of various online systems, e-mail and Internet access training, and general orientations to the libraries.

The Main Library supports teaching and research in fine arts, humanities, and social sciences. The following Main Library departments provide specialized services to users.

The Reference Department maintains an open-shelf collection of approximately 20,000 volumes. Librarians assist in the use of reference materials and provide information on a 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.

Government Publications and Microforms contains more than 400,000 publications issued by the U.S. government, the State of California, international organizations, and Canada, as well as the Orange County Public Affairs Collection, a resource for current information on local topics issued by both governmental and non-governmental agencies. The microforms collection contains over one million pieces, including newspapers, other periodicals, 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 photocopying materials are available.

The Department of Special Collections contains noncirculating holdings of rare books and early printed works, noteworthy or finely printed editions, exceptionally fragile or costly 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, the Ruth Clark Lert Dance Collection and Archives, California history and literature, British naval history, contemporary poetry, dance, historical costume, political pamphlet literature, and the Emma D. Menninger collection in horticulture.

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, newspaper clippings, audiovisual materials, and manuscripts.

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

Library Copy Service provides conveniently located copiers for patron use in all libraries (Main, Science, and Medical Center). For an additional charge, patrons may leave materials to be copied. Typewriters and a special function copier are located in the Main Library Copy Service on the third floor. Service is available all hours that the libraries are open. A card system is used in all libraries for photocopies, search print requests, and various other items. Card dispensers/regenerators are available in all libraries.

Reserve Services offers limited circulation of required or collateral reading materials that have been selected by the faculty.

Other Main Library facilities include individual and group study areas and a room containing study aids for blind and partially sighted students.

The first and second floors of the Main Library will be renovated during fall quarter, 1996. While there will be some inconvenience during the actual construction, once the work is completed, the Main Library will have new facilities such as a technologically enhanced classroom; an Electronic Media Center housing a range of online and media resources for research, study, and teaching; and a redesigned, more attractive and functional lobby area.

Opened to the public in mid-1994, the Science Library is the second major library on the UCI campus. The six-story building, with capacity for over 500,000 volumes, centralizes the science and technology collections formerly housed in four separate campus libraries. The Science Library collection contains materials in astronomy, biology, chemistry, computer science, engineering, geosciences, mathematics, medicine, physics, and allied fields. The \$32-million facility features a 6,000-square foot Interactive Learning Center, a reference consultation and user self-search room, 2,200 reader stations, a current periodicals reading room, a micro-computer laboratory, a 24-hour study hall, and special reading rooms for faculty and graduate students. The Science Library offers reference assistance, computer-assisted reference service, instruction in library use and information management, and CD-ROM user self-search workstations.

The Science Library is also home to the University Archives, the official repository for records having permanent value in documenting the history of UCI. These records include publications, manuscripts, photographs, and other records of administrative and academic units, student organizations, and campus support groups.

In addition, the Science Library also houses the technical services operations for the entire UCI library system.

Located at the UCI Medical Center in Orange, the Medical Center Library serves the information and research needs of the Medical Center and supports the teaching activities of the College of Medicine. Its collection includes approximately 47,000 volumes and close to 1,000 clinical serials subscriptions. The Medical Center Library provides a full range of services, including reference service, user education, and CD-ROM user self-search workstations.

## INSTRUCTIONAL DEVELOPMENT SERVICES

Instructional Development Services (IDS), a unit of the Division of Undergraduate Education, enhances campuswide teaching, research, and training through various programs and services. The IDS Teaching Consultation Program offers free and confidential consultation services with experts on various teaching methods, curriculum development, testing, and evaluation. A library of teaching resources also is available. In addition to these programs, IDS develops and coordinates a campuswide training program for most new graduate teaching assistants (TAs). Other services include videotaping and feedback on classroom presentation, mid-term course evaluations, and on-going training workshops. IDS is located in 902 Humanities Trailer Complex; telephone (714) 824-6188. The IDS newsletter, announcements, and teaching tips are available on the World Wide Web at <http://www.ids.uci.edu/~ids/>.

## MEDIA SERVICES

The Media Services Department, a unit of the Division of Undergraduate Education, supports campus academic programs by providing comprehensive services relating to instructional technology including computerized presentation technology, video conferencing, audiovisual equipment rental, film and video research and ordering, equipment repair, lecture hall media support, and video and multimedia production. The main office is in the ANTRAP, adjacent to Humanities Hall. Office hours are 8 a.m. to 12 p.m. and 1 p.m. to 5 p.m., Monday through Friday. Staff are available after hours and on weekends by special appointment. For general information and audiovisual rental information, telephone (714) 824-5128; for film or video research and ordering, and lecture hall support, telephone (714) 824-6233; and for production or consultation services, telephone (714) 824-7581.

## OFFICE OF ACADEMIC COMPUTING

The Office of Academic Computing (OAC) provides electronic communications and computing resources and services in support of UCI's research and instructional programs. OAC operates the campus telephone system and data communications network. The campus network infrastructure provides for ethernet and higher-speed connectivity from campus departments to the major national and international networks. OAC provides access to a wide range of computer systems and software and provides educational, training, consultative, and technical services to students, faculty, and staff.

OAC makes basic electronic communications services available to all enrolled UCI students via its Educational Access (EA) computing service. The EA service is currently housed on a cluster of UNIX-based computer systems and includes access to electronic mail, USENET News, the World Wide Web, educational software, and a variety of other services. OAC provides a similar service to all UCI faculty and staff via its Electronic Communications for Employees (E4E) service.

Approximately 140 ASCII terminals, X-terminals, MS-Windows computers, and Macintosh computers are available to all UCI students for educational use 24 hours per day on a first-come, first-served basis in computer laboratories surrounding Room E1140 in the Engineering Gateway building. All common Macintosh and MS-Windows applications are available including word processing, spreadsheet, statistics, graphing, and presentation software. The X-terminals provide graphical interface access to all common UNIX-based software. Computer peripherals including flat-bed image and text scanners and laser printers are also available. While school is in session, OAC student consultants are available to provide assistance to those using the facilities.



OAC operates three classroom laboratories in the Engineering and Computing Trailer (ECT). Twenty-five Pentium MS-Windows computers are located in Room 123, and 25 Power Macintosh 7100s are located in Room 120. Both facilities are available for drop-in use when not scheduled for classes. The Visualization/UNIX laboratory, located in Room 124, houses eight UNIX workstations that run AVS and other visualization and graphics software. Graphics hardware and software for instruction and research in computational science is available, providing easy access to contemporary visualization algorithms and techniques.

For advanced scientific computing needs, OAC operates the Convex C3840, a high-performance, vector computer with two gigabytes of main memory, over 10 gigabytes of disk space, and four processors. Complementing the Convex system are smaller systems and workstations for scientific computation and visualization. The OAC staff includes individuals with advanced degrees in physics and mathematics, as well as with experience using computers in the biological sciences, engineering, and other academic fields. Resources at the San Diego Supercomputer Center are also available for use by qualified UCI faculty and students.

OAC offers a variety of additional services. For more information, see OAC's World Wide Web page at <http://www.oac.uci.edu>; visit OAC's offices in the Engineering Gateway Building, Room E2130; or contact the OAC Help Desk by sending electronic mail to [oac@uci.edu](mailto:oac@uci.edu) or by calling (714) 824-6116.

### 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; telephone (714) 824-6006.

### 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. UCI is responsible for two reserves: the San Joaquin Freshwater Marsh Reserve and the Burns Piñon Ridge Reserve. Additional information is available from the manager; telephone (714) 824-6031.

#### 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 UCI campus. The Marsh consists of a series of freshwater ponds and their attendant aquatic flora and fauna, and is especially known for its rich bird life, both resident and migratory. Researchers and observers have recorded more than 200 species of birds in the Reserve, a major stopping point on the Pacific Flyway. Periodic tours are conducted.

#### 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.

### 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) 824-5833.

### LASER MICROBEAM AND MEDICAL PROGRAM

The Laser Microbeam and Medical Program (LAMMP) was established at UCI in 1979 as a national facility in the area of laser microbeam biotechnology. LAMMP 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 and laser-tissue interactions are studied at the 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 LAMMP office; telephone (714) 824-3664.

### THESAURUS LINGVAE GRAECAE

Financed through private and federal funds, the Thesaurus Linguae Graecae (TLG) began in 1972. Its 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 the lexical analysis and categorization of the texts in the data bank. TLG staff have also established procedures to facilitate nationwide access to data-bank resources at UCI. The data bank currently contains some 73 million words of Greek text.

Close ties with the Department of Classics are evidenced by faculty participation in TLG research and TLG support of graduate students. The jointly sponsored TLG/Classics Research Laboratory offers faculty, graduate students, and advanced undergraduate students access to a wide variety of the latest hardware and software resources. In addition, TLG's library holdings enhance those of the University Library, and TLG-related conferences and scholarly visits afford faculty and students contact with eminent classicists. The TLG 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 Healthcare Organizations. 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 462 beds, UCI Medical Center serves approximately 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 Chao Family Clinical Cancer Research Center at UCI is the only facility in Orange County—and one of just a select group of centers in the nation—to be designated a Clinical Cancer Center by the National Cancer Institute (NCI). NCI recognizes only top-level institutions that conduct a broad range of research programs for the benefit of patient care. The hospital is also 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. Other services include a multidisciplinary cardiology program, state-of-the-art neurosurgery services, 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 cerebral palsy, epilepsy, Parkinson's disease and other movement disorders, and Alzheimer's disease. UCI Medical Center is also 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 a variety of eye disorders. 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. Recently completed areas include intensive care units for medical, surgical, neurological, and cardiac patients, as well as a four-story cancer facility combining outpatient care and clinical and basic research. The UCI Medical Pavilion houses multispecialty patient care services in a convenient location on the Medical Center campus.

Comprehensive outpatient services are available on the UCI Campus adjacent to the College of Medicine, through the UCI Medical Plaza. The facility offers primary care and multispecialty services, including cardiology, dermatology, gastroenterology, neurology, obstetrics and gynecology, ophthalmology, orthopedics, and pediatrics. The Plaza also provides a site for an Executive Health Program for persons in the business community.

UCI's network of outpatient facilities also includes the UCI Family Health Center—Anaheim, the UCI Family Health Center—Santa Ana, the UCI Westminster Medical Center, and the Laguna Beach Community Clinic.

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

## UCI CENTER FOR OCCUPATIONAL AND ENVIRONMENTAL HEALTH

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, and (3) to provide clinical evaluation of the worker/patient for work-related disease. The Centers have strong ties to the University's Schools of Medicine and Public Health.

The Center is comprised of health professionals from UCI. Faculty research is concerned with identification of causal association between disease and occupational exposure as a basis for prevention of occupational disease and injury. The Center's primary areas are occupational medicine, toxicology, and epidemiology, and it also is concerned with the prevention of disease due to environmental exposures.

The Center houses a referral clinic, faculty and staff offices, and facilities for research and teaching in industrial hygiene and toxicology, a classroom, a library, and study space for residents in occupational medicine and other graduate students. Additional information is available from (714) 824-8641.

## Office of University Advancement

The Office of University Advancement is responsible for increasing awareness and support of UCI's teaching, research, and public service missions through a strategic program incorporating development, communications, alumni relations, and governmental relations.

In an era of decreasing state and federal funding to the University of California, the importance of private support is greater than ever. The Development Office, in conjunction with the UCI Foundation, raises private funds from individuals, corporations, and foundations. Their combined efforts provide a bridge between the University and the community, promoting a climate of understanding, support, and access.

Key components of UCI's development activities include a major gift program, in which development officers work with donors on behalf of schools, programs, and students; corporate and community relations, which fosters relationships with business and community members; foundation relations, which coordinates campuswide gift solicitations from charitable foundations; planned giving, which assists donors wishing to include UCI in their wills or estate plans; and annual giving, which is the umbrella for a variety of giving clubs including the Chancellor's Club, Daniel G. Aldrich, Jr. Society, Scholar's Circle, Chief Executive Roundtable, Humanities Associates, Arts Affiliates, Social Ecology Associates, the Athletic Foundation, and more.

The Communications Office assists the University in articulating its missions and priorities and informing the public about UCI's achievements, academic accomplishments, and events. Through a comprehensive program that incorporates media relations, publications, electronic communications, and the World Wide Web, a wide variety of audiences are reached on an ongoing basis. The Office also produces the twice-yearly *UCI Journal*, which highlights research, people, and programs of note, and *UCI News*, a newspaper and electronic newsletter for faculty and staff.

The UCI Alumni Association advances and supports the interests of UCI and its graduates through recruitment and retention of students and alumni, providing financial support via scholarships and fellowships, and disseminating information about UCI and its objectives. The Association provides opportunities for alumni to form lasting bonds with UCI through membership in its various chapters and participation in continuing education, seminars, and special programs for UCI graduates.

The Office of Governmental Relations maintains active relationships with federal, state, and local representatives to foster support for the public financing and well-being of UCI. The Office represents UCI in the UC Sacramento and Washington offices, which work to coordinate support for the UC state and federal budgets.

For more information, call: University Advancement, (714) 824-8696; Development Office, (714) 824-8696; Communications Office, (714) 824-6922; Alumni Association, (714) 824-2586; Governmental Relations, (714) 824-4663.

## UCI ACADEMIC SENATE



### ANN BLAIR

Assistant Professor of History

*Distinguished Assistant Professor Award for Research, 1995-96*

I teach and study in the culture of early modern Europe (1500-1750), especially in the history of science, during the period when conceptions of the cosmos, nature, and scientific method were undergoing radical changes (often called the "Scientific Revolution," spanning roughly from Copernicus to Newton, say 1543-1687). In my research I focus on understanding the inner coherence of the traditional system of thought which was ultimately overthrown in the seventeenth century, but which thrived for over 2,000 years. Grounded in ancient texts like those of Aristotle and Pliny, this traditional natural philosophy provided explanations of the natural world that "worked" across many centuries and were transmitted for generations with subtle variations and adaptations. Why, then, fairly suddenly, did radically new conceptions of nature and scientific method emerge—those which ultimately led to important modern developments? This question has fascinated historians since the emergence of the discipline of the history of science early in this century. I try to approach it from a new angle, by looking at the survival and reactions of the "losing" side, in which, inevitably, all the proponents for modern science and their audiences were initially trained.

These research interests shape my teaching at all levels. In using mostly primary sources as reading assignments, I encourage students to set aside their modern assumptions (about science, or politics, or the past) in order to take seriously the often quite different categories and presuppositions that prevailed at a particular time and place. As in my research, I emphasize in my courses the role of unexpected consequences in shaping historical developments in order to shed the notion that historical developments were inevitable, as they sometimes seem from the vantage point of the present day. Above all, I try to share my enthusiasm for analyzing all kinds of historical sources, from rare printed books to old scientific instruments, from manuscripts in the archives to works of art, for what they tell us, each in different ways, about how the world made sense to Europeans of the early modern period.

*Professor Blair, a UCI faculty member since 1993, has recently accepted a position at Harvard University.*



### MICHAEL BUTLER

Professor Emeritus of Social Sciences

Former Dean of Undergraduate Studies

Director of the Farm School

*Daniel G. Aldrich Jr. Distinguished University Service Award, 1995*

Creative activity and its cross-links with teaching are resonant themes for me. At UCI I have been a professor and administrator, but on the side I've led another, wholly unexpected life: directing an experimental elementary school in the University for over 25 years. The philosophy that animates the school grew out of reflection strongly shaped by studying, teaching, and working in research universities, most notably this one.

In the late 1960s I was a very junior professor, and although I had long been fascinated by the act of learning, UCI was the first place I taught. Among other things I taught mathematics.



## DISTINGUISHED FACULTY

The experience was immensely rewarding but unsettling. I thought of math as beautiful, richly ordered, and fun. Most of my students in those required courses appeared to think of it, at least at first, as arbitrary, impenetrable, incoherent and dull; some of them found it scary. A few students happily explored the distribution of a sample statistic, for example, pushing and pulling at it to see how it worked, but they were regarded as having a peculiar knack. There was no shame in not having it; that was just the luck of the genetic draw.

Or did the attitude of the others toward math have to do with the way they had been educated? Their reports of their pre-college math study matched what I found when I started visiting elementary and high schools and reading texts of that era: my students had been *spending most of their time memorizing calculation recipes and learning to run them more or, often, less well*. But that wasn't at all what the kind of people who had discovered the math did. Mathematicians look for and find patterns in formal objects, extend them, seek counter-examples, figure out why the patterns work, and then, finally, publish a conventionally constrained account of one way that they work. The last is the public part, but the rest is what they do. Almost none of my undergraduate students seemed to have had much experience with that. There was an odd disjunction between what practitioners did and what we asked students to do, a disjunction that was deeper and odder the more you looked at it. It was as though we had plucked the fruit "mathematics" for use in schools, peeled it, and fed students the rind instead of the flesh.

Much the same thing seemed to be true in other areas. What working historians did, for example, or scientists, was rarely much like what schoolchildren did, so it wasn't surprising that undergraduates found it hard to think that way when asked. Again, it was as though we had discovered what it was that delighted practitioners, that drew them to their discipline—and in fact kept it a discipline, a thing that people were willing to spend their lives in, over generations—and having found these sources of delight in practice, we threw them away and taught the residue.

So we and the times and UCI being young, and there being some farmhouses available on the edge of the campus, some of us made a school to redress these wrongs. We wanted a school where children would learn to do what finders and makers do, not just master more or less badly and mechanically some scattered things they have worked out. The students would ideally acquire some of the skills and habits of mind of mathematicians and historians and writers and scientists and artists—even learn to do what good thinkers do when they are thinking well, independent of a particular practice; and they would learn to find matter of interest in and around themselves, and to develop and sustain those interests, as creators of new art and knowledge must do. These were not the only aims of the School, called the Farm School, but they were central.

We are older now, but the School, and children, and the promise that comes from being in a university, where people explore as a deep part of their lives, are all still there.



## JULIA REINHARD LUPTON

Associate Professor of English and Comparative Literature

*Presidential Award for Excellence in Undergraduate Research, 1995 (Faculty-member recipient)*

I'm a scholar of the Renaissance (1300-1600), a period of "discovery"—not so much the invention of new things as the uncovering of old ones, in particular, the great poems, statues, and philosophies of ancient Greece and Rome. In some cases, this process of "dis-covering" involved the actual excavation of statues, manuscripts, or buildings from centuries of medieval debris and neglect. Yet much of Renaissance discovery entailed not the actual retrieval of lost works so much as a change in perception toward extant ones. Renaissance "discovery" entailed a new respect and appetite for objects from a past era, a pagan rather than Christian culture in which the human mind, the human body, and the natural world were seen as objects of beauty, intrinsic worth, and potential knowledge.

It is not enough to teach my students *about* this historic moment of discovery; I also need to produce the act and attitude of discovery in them. My students need to experience the same combination of historical awe and creative passion for a past world that led Renaissance poets, humanists, and artists to struggle to understand classical antiquity, and to reconstruct it in the landscapes and libraries of their present reality. I need to communicate the vitality of the classical heritage as a living body of stories, images, and paradigms that continue to inform the present, from the Shakespeare allusions that still enliven the dialogue of movies and television shows, to the humanist ideal of equality under law embodied in the United States Constitution, to the troubling complicity between classic civic virtues and imperialism that links the ancient world to contemporary politics.

As a lecturer in the Humanities Core Course, I introduce students to classics of Western civilization in relation to an urgent contemporary issue or theme. In this way, freshmen can "discover" the continued impact of these master works on the texture of the world in which they live. In my more advanced undergraduate classes, students encounter classical and Renaissance works in their historical unfolding, so that they can "discover" how traditions come into being—not only the Western tradition, but global and local ones as well. I try to lead my honors thesis students and graduate students to make their own discoveries about the past by tracing new connections between disparate works. At all levels, I ask my students to *discover discovery*—to encounter, understand, and reproduce the many acts of cultural restoration and revision that make up the dramas great and small that we call "the humanities."



## LYNN MALLY

Professor of History

*Distinguished Faculty Lectureship Award for Teaching, 1996*

When I tell people I am a historian, I sometimes get a bewildered response: "How can you stand it? So many names and dates." Many students come to the University with the same impression. They expect to be confronted with long lists of facts to memorize and reassemble on exams. It is my job to convince them that historical analysis is a process of discovery. Names and dates are of course important, but they are only the starting point. How do historians create their accounts of past events? How do their own views of the current world affect their vision of the past? How can students learn to evaluate this material critically and construct their own interpretations of historical events? These are the questions I try to raise in my classes.

In order to give students a sense of the creative process involved in historical analysis, I make extensive use of written and visual primary source materials. Because I specialize in Russian history, a field that is unfamiliar to most of my students, I believe it is especially important to present sources generated from within Russian society. When investigating the

changes Nikita Khrushchev implemented in the Soviet Union after Stalin's death, for example, I show students a broad range of materials. We examine documents generated by the Communist Party together with memoirs, films, and popular literature. Armed with this information, I ask students to come to their own conclusions about how significantly Khrushchev's reforms altered the Soviet system.

My training as a Russian and Soviet historian makes me particularly sensitive to the centrality of primary source materials in the process of historical discovery. Before the demise of the Soviet Union, unpublished materials held in archives were tightly controlled by the government. Foreign scholars were denied access to whole sets of documents and sometimes even denied visas to study in the Soviet Union. Beginning with Gorbachev's reforms in the late 1980s, archives and restricted libraries began to open to the public. Scholars now have a chance to evaluate a wide range of materials and to address questions that were once only the subject of speculation. This unprecedented access to new sources has allowed historians to reexamine old debates and pursue entirely new areas of inquiry. As a result of these changes, my area of research is experiencing a wonderful burst of creative energy. I hope I can transmit this sense of excitement and discovery to the students in my classes.

## KAI-YEUNG (SUNNY) SIU

Assistant Professor of Electrical and Computer Engineering

*Distinguished Assistant Professor Award for Research, 1995-96*

We currently are experiencing a radical change in our daily lives, thanks to the availability of efficient, low-cost information and communication technology. These technological advances promise to significantly enhance the quality of communication, health care, education, and entertainment, and improve the utilization of our natural resources. As a faculty member of Electrical and Computer Engineering, I have been involved in several research projects in information and networking technology. The research problems my students and I address find a common theme in the technological challenge of constructing an integrated architecture in which computers and communication networks are components of an intelligent information infrastructure.

Since I joined the UCI faculty, my research program has taken a new and accelerated path, partly because of the concentration of high-tech industries surrounding our campus. Many of these industries are searching for efficient solutions to new sets of technical issues and they offer a rich source of research problems. Although my research focuses on fundamental concepts and theories, the resulting new insight permits rapid short-term solutions to practical problems, including those of interest to industry. The exciting new role of the "information engineer" in solving real-world problems often finds its way into my lectures because I believe understanding how to apply ideas is as important as the ideas themselves for a good engineering education. Speaking of practical applications, local industries offer plentiful employment opportunities for our students following graduation!

In the past several years at UCI, I have had some exciting moments of discovery. These moments were special to me not only because they constituted milestones in my research career, but also because they advanced UCI's goal of establishing itself as a premier research institution.

I feel fortunate to be able to involve many bright undergraduate and graduate students in my research program. Some of my discoveries would not have been possible without their contributions. With the increasingly widespread use of information and communication technology, these collaborative projects are particularly exciting because they have potential impact on all walks of life. A great number of my former students have remained in close contact with me since they graduated, and I find hearing about their progress and success most satisfying.



In today's environment of rapid technological changes, we also face new challenges in educating our future engineers. It has always been my conviction that we should emphasize in our classrooms the engineering principles and theoretical foundations. On the other hand, I see an increasing need to inform our students of the latest advances in technology and how they can be applied. Our curriculum has evolved to address the challenge of balancing theory with practice and, based on my discussions with former students, our graduates have been well served by this approach.

At UCI we have some of the newest and finest computing facilities and library resources. Our faculty are involved in leading research while remaining committed to high standards of excellence in education. Consequently, our students are well prepared for meeting the future demand in the coming era of information technology. UCI is a university in which we take pride and which offers a stimulating environment for those eager to experience and share the excitement of discovery.



## ETEL SOLINGEN

Associate Professor of Politics and Society

*Distinguished Assistant Professor Award for Teaching, 1995-96*

Over my years at UCI, I have encountered a special openness on the part of students to learn about the phenomenon of international cooperation. That openness allowed me to develop a dedicated space in our curriculum for the study of international cooperation. On the one hand, understanding cooperation among states requires deepening our knowledge of global political and economic processes as well as of remote regions and cultures. On the other hand, our daily individual experiences are a rich source of ideas that can help us untangle the makeup of cooperative behavior. The ability to link the two levels, the global and the more parochial or personal, offers a particularly rewarding learning context.

In addition, students at UCI, whether they come from Orange County or from overseas, bring in a diverse baggage of experiences of particular value to the understanding of international (and interpersonal) cooperation. This diversity, in turn, provides both students and professors with a privileged environment in which different and innovative approaches can be formulated and tested. The classroom thus functions as both a virtual laboratory on the more elusive global dimensions, and on the more concrete local expressions, of cooperation. To put it simply, diversity at UCI drives intellectual progress in the study of international cooperation. And such progress results from interactions in the classroom as well as in the more individualized—but often cooperative—research activities of students and professors.

A further contribution to the study of international cooperation at UCI is the result of an interdisciplinary interest in the topic. To begin with, all the social sciences converge in their concern with the political, economic, psychological, and sociological dimensions of cooperation. Moreover, students majoring in physical and biological sciences have shown to be no less challenged to explore this subject matter. In the first place, they do sense the evident links between the global and local. They also quickly realize that, whatever their field of inquiry, an international cooperative dimension is at play, be it in the realm of environmental, health, or any other technical field.

The basic idea is to create an intellectually stimulating learning environment that plants the seeds for a lifelong interest in cooperation at all levels. Students are not passive recipients in this endeavor, but, instead, contribute to the development of a common enterprise at UCI and beyond.



## In Memoriam

### JOHN J. WASMUTH

Professor of Biological Chemistry, Pediatrics, and Psychiatry, 1977-1995

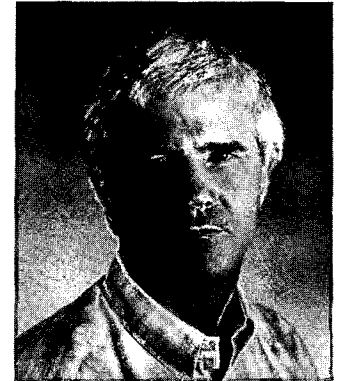
*Distinguished Faculty Lectureship Award for Research*

Since I have been old enough to read, mystery stories have captured most of my free time and imagination. Although it may sound very nonacademic, my favorites have been books by Agatha Christie and Sir Arthur Conan Doyle's chronicles of one of my idols, Sherlock Holmes. Both authors scattered a few clues throughout their stories, each of which taken by itself, meant very little. However, someone who had the insight to connect the relevant clues and eliminate the irrelevant information always got the brass ring. When I began to decide what I wanted to do for a living in my adult life, I knew it had to involve solving mysteries. As a graduate student in genetics I realized that, for me, the ultimate mysteries involved understanding the intricacies of how seemingly insignificant differences in the hereditary material, DNA, could explain the enormous variations among people. In particular, I was struck by the fact that minor differences in almost any one of the 100,000 genes we all have in all our cells could be the difference between a happy, healthy person and a person with a horrible, debilitating genetic disease. What could be a greater mystery to solve than to find the one change in three billion "bits" of DNA that is the difference between health and horrible, agonizing death? It is not only a fascinating detective story and a complex puzzle but, once you have solved the mystery for any given genetic disease, you might well have provided the critical piece of information that will enable other scientists or physicians to cure the disease.

Since coming to UCI more than 18 years ago, I have spent most of my professional life searching for genes that cause different genetic disorders. As is often the case in science, the first 14 or 15 years of my work involved laying the basic groundwork that I thought was necessary to solve the mysteries of several genetic disorders. Fortunately, the groundwork has paid off in a big way over the past three years; my laboratory and the Human Genome Center that I direct have been involved in identifying the genes and the exact mutations that cause six different genetic diseases, including the genes responsible for an inherited form of colon cancer, a gene that causes the most common form of dwarfism, a gene that is responsible for the most common genetic cause of infant death, and the gene responsible for a severe neurological disorder, Huntington disease. Throughout this work, graduate students, postdoctoral scientists, and undergraduate students have played key roles in each of these discoveries. In fact, without the students, the work could never have been done. As exciting as these discoveries are to me, the students in my laboratory are even more excited when they realize that work they did led directly to solving the extraordinary mystery that is any genetic disorder.

No one can imagine what it is like to be the first person in the world to see the exact DNA sequence mutation that causes a genetic disease. It's like being the first person to walk on the moon, except that finding the DNA sequence change that causes a genetic disorder is much more important in terms of the future of humankind than walking on any other celestial body. I am very proud that so many students working with me have experienced the feelings of joy, awe, and ecstasy that come with being the first to visualize the basic cause of a genetic disease that scientists and physicians have been trying to understand for decades or centuries.

*Professor Wasmuth, one of the world's most prominent genetic researchers, passed away on December 29, 1995. He also was Director of UCI's National Center for Human Genome Research, the sixteenth such site selected by the National Institutes of Health. In his memory, the Wasmuth Family and UCI have established the John J. Wasmuth Fellowship Fund. For information about this fund, contact the UCI Foundation at (714) 824-6535.*



# PREADMISSION MATTERS

## 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 *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, enrollment procedures, 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. Research and Graduate Studies
5. Academic Programs: Arts, Biological Sciences, Education, Engineering, Humanities, Information and Computer Science, Interdisciplinary Studies, Management, Physical Sciences, Social Ecology, Social Sciences, and Medicine.

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, or emphases).
- e. Advice about planning a program of study, and other information relevant to the academic progress and experience of students majoring in fields within each school or program.
- 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 (numbered 1-99) and upper division (numbered 100-199). Courses numbered 200 and above are graduate or professional courses. Lower division usually refers to freshman-sophomore courses, upper division to junior-senior courses. However, junior and senior students may take lower-division courses, and freshmen and sophomores may normally take upper-division courses when upper-division standing is not a prerequisite and when any 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 designates an honors course.

The (4) or (4-4-4) designation following the course title indicates the quarter unit credits toward graduation. Some courses give other than four units of credit; for example, two, five, or a range of from one to 12.

The notations F, W, S, or Summer after the course number and title indicate when the course will be offered: fall, winter, or spring quarter, or summer session.

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

## OFFICE OF ADMISSIONS AND RELATIONS WITH SCHOOLS

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

Additional information about the services listed below is available from the Office; telephone (714) 824-6703.

### Undergraduate Admissions

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

### Intersegmental Relations

Staff are involved in: (1) promoting liaison and curricular articulation between UCI and California Community Colleges; (2) intersegmental activities and programs for school improvement; (3) various educational organizations designed to facilitate regional cooperation (South Coast Higher Education Council); and (4) secondary school accreditation reviews through the Western Association of Schools and Colleges.

### School and College Relations

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) assist prospective transfer students and community college faculty and staff; (6) participate in activities and projects designed to increase the enrollment and enhance the academic success of students from groups currently underrepresented at the University; and (7) sponsor an Academic Talent Search to identify gifted and high-ability middle grade (grades six through nine) students and to design activities to prepare them for the University and promote their academic success.

### On-Campus Services

Staff: (1) offer student-led campus tours; (2) host programs for prospective students and educational groups including UCI Preview Day (fall and spring) for high school students, and Transfer Track (fall) for prospective transfer students; (3) maintain an honors outreach program for high-achieving prospective UCI students including the UCI Academic Talent Search and Honors Day; (4) inform UC and UCI administrators and faculty of developments in California schools and community colleges; and (5) provide consultative services to campus departments wishing to provide programs for schools and colleges or special recruitment for specific majors or programs.

### Transfer Student Services

Transfer Student Services (TSS), a component of the Office of Admissions and Relations with Schools, 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. TSS staff meet with prospective transfer students to discuss admission requirements, academic planning and preparation, and UCI lower-division major and general education requirements. Articulation agreements, which identify how community college courses may be used to fulfill lower-division UCI degree requirements, are facilitated through TSS.

### Campus Tours

Student-led tours of the campus are conducted weekdays at noon, except during academic recesses; Saturday tours are offered during October, November, and April only. To confirm tour dates, times, and parking instructions and to arrange special tours for school groups of 10 or more during the regular academic year, please call (714) 824-6703.

## SPECIAL OPPORTUNITIES

### Educational Opportunity Program

The goal of the Educational Opportunity Program (EOP) is to realize and expand equal educational opportunities for low-income and disadvantaged groups residing in California. Eligibility for EOP is based primarily on family income level, and all students served by the program must be California residents, with the exception of American Indian students. EOP programs and services are located in the Office of Admissions and Relations with Schools and in the Center for Educational Partnerships.

In keeping with the mission of increasing public awareness of UCI and EOP, outreach counselors in the Office of Admissions and Relations with Schools visit high schools and community colleges throughout California and meet with prospective students, parents, teachers, counselors, and school officials to discuss the admission and financial aid process, housing, and the academic opportunities available at UCI. Call (714) 824-7484 or send electronic mail to oars.@uci.edu for information.

### Center for Educational Partnerships

The Center for Educational Partnerships pursues a sustained commitment to the quality of public education at all levels. The Center's mission is to stimulate and advance cooperative educational relationships among UCI and California schools and colleges. Through established programs such as Early Academic Outreach, Academic Development Partnerships, and community outreach, the Center seeks to foster community links to improve the preparation of all students, particularly those from disadvantaged groups, for success in higher education. Call (714) 824-7482 for information.

### Celebrate UCI

On Saturday, April 19, 1997, UCI will host its annual open house—Celebrate UCI. There are a multitude of attractions of interest to current and prospective students and their families, alumni, and the general community. Among the day's events are the Wayzgoose Medieval Fair, "Zot Trot" 5-K Run, and Children's Dance Festival. 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 and Arboretum also are available. Other features of the day include music, food and game booths, jugglers, and mimes. Additional information is available from the Office of the Dean of Students; telephone (714) 824-5182.

### 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 of this *Catalogue* and from the UPHSS coordinator, telephone (714) 824-4543. After matriculation, information is available from the Division of Undergraduate Education, telephone (714) 824-6987.

## UNDERGRADUATE AND GRADUATE DEGREES

Degree Title	Degree <sup>1</sup>	Degree Title	Degree <sup>1</sup>
Administration	Ph.D.	Earth System Science	M.S. <sup>2</sup> , Ph.D.
Aerospace Engineering	B.S.	East Asian Cultures	B.A.
Anthropology	B.A.	East Asian Languages and Literatures	M.A. <sup>2</sup> , Ph.D.
Applied Ecology	B.S.	Economics	B.A., M.A. <sup>2</sup> , Ph.D.
Art History	B.A.	Education	Credential Programs
Biological Sciences	B.S., M.S. <sup>2</sup> , Ph.D.	Educational Administration	Ed.D.
Business Administration	M.B.A., M.B.P.A. <sup>4</sup>	Electrical and Computer Engineering	M.S., Ph.D.
Chemical and Biochemical Engineering	M.S., Ph.D.	Electrical Engineering	B.S.
Chemical Engineering	B.S.	Engineering	B.S., M.S., Ph.D.
Chemistry	B.S., M.S. <sup>2,3</sup> , Ph.D.	English	B.A., M.A. <sup>2</sup> , M.F.A., Ph.D.
Chinese Language and Literature	B.A.	Environmental Analysis and Design	B.A.
Civil Engineering	B.S., M.S., Ph.D.	Environmental Engineering	B.S.
Classical Civilization	B.A.	Environmental Health Science and Policy	M.S., Ph.D.
Classics	B.A., M.A. <sup>2</sup> , Ph.D.	Environmental Toxicology	M.S., Ph.D.
Comparative Culture	B.A. <sup>4</sup> , M.A. <sup>4</sup> , M.A.T. <sup>4</sup> , Ph.D. <sup>4</sup>	Film Studies	B.A.
Comparative Literature	B.A., M.A. <sup>2</sup> , Ph.D.	Fine Arts	B.A., M.F.A. <sup>4</sup>
Computer Engineering	B.S.	French	B.A., M.A. <sup>2</sup> , Ph.D.
Criminology, Law and Society	B.A., Ph.D.	Genetic Counseling	M.S.
Dance	B.A., B.F.A., M.F.A.	Geography	B.A. <sup>4</sup>
Drama	B.A., M.F.A.	German	B.A., M.A. <sup>2</sup> , Ph.D.
		Health Psychology	Ph.D.
		History	B.A., M.A., Ph.D.
		Human Development	Ph.D.
		Humanities	B.A.
		Information and Computer Science	B.S., M.S. <sup>2</sup> , Ph.D.
		Japanese Language and Literature	B.A.
		Linguistics	B.A.
		Mathematics	B.S., M.S. <sup>3</sup> , Ph.D.
		Mechanical and Aerospace Engineering	M.S., Ph.D.
		Mechanical Engineering	B.S.
		Medicine	M.D.
		Music	B.A., B.Mus., M.F.A.
		Pharmacology and Toxicology	M.S. <sup>2</sup> , Ph.D.
		Philosophy	B.A., M.A. <sup>2</sup> , Ph.D.
		Physics	B.S., M.S. <sup>2</sup> , Ph.D.
		Political Science	B.A., Ph.D.
		Psychology	B.A., Ph.D.
		Psychology and Social Behavior	B.A.
		Public Administration	M.B.P.A. <sup>4</sup> , M.P.A. <sup>4</sup>
		Radiological Sciences	M.S., Ph.D.
		Russian	B.A.
		Social Ecology	B.A., M.A., Ph.D.
		Social Science	B.A., M.A. <sup>2</sup> , Ph.D.
		Sociology	B.A.
		Spanish	B.A., M.A., M.A.T., Ph.D.
		Studio Art	B.A., M.F.A.
		Transportation Science	M.S., Ph.D.
		Urban and Regional Planning	M.U.R.P., Ph.D.
		Women's Studies	B.A.



<sup>1</sup> Degrees: B.A. = Bachelor of Arts; B.S. = Bachelor of Science; B.Mus. = Bachelor of Music; Ed.D. = Doctor of Education; 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 Index and the academic unit sections for information.

<sup>2</sup> 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.

<sup>3</sup> In addition to the regular M.S. degree program, a program coordinated with the Department of Education leads to an M.S. degree and a Teaching Credential.

<sup>4</sup> Admission to this degree program is unavailable until further notice.



## UNDERGRADUATE MAJORS, MINORS, AND ASSOCIATED AREAS OF STUDY

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

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

A **minor** consists of a coordinated set of 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. An **interdisciplinary minor** consists of courses offered by two or more schools or programs. 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 appears on the student's transcript but not on the baccalaureate diploma. Concentrations are taken in combination with a major in one of the schools or programs offering the concentration.

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

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

### SCHOOL OF THE ARTS

#### Majors:

Dance

Specializations (B.F.A. only):

Choreography

Performance

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:

Drama

Music\*

Studio Art

#### Concentration:

Medieval Studies (in combination with any major in the School of the Arts or the School of Humanities)

### SCHOOL OF BIOLOGICAL SCIENCES

#### Majors:

Biological Sciences

Specializations:

Cell Biology

Developmental Biology

Ecology

Evolution

Microbiology

Molecular Biology and Biochemistry

Neurosciences

Physiology

Plant Sciences

Applied Ecology (offered jointly with the School of Social Ecology)

### SCHOOL OF ENGINEERING

#### Majors:

Aerospace Engineering

Chemical Engineering

Civil Engineering

Specializations:

Environmental Engineering

Structural Engineering

Transportation Engineering

Water Resources Engineering

Computer Engineering

Electrical Engineering

Specializations:

Electro-optics and Solid-State Devices

Microelectronics Systems Manufacturing

Power Systems

Systems and Signal Processing

Engineering

Environmental Engineering

Mechanical Engineering

Specializations:

Aerospace Engineering

Combustion/Propulsion

Environmental Engineering

Heat Transfer/Fluid Mechanics

Materials Science and Engineering

Mechanical Systems

### SCHOOL OF HUMANITIES

#### Majors:

Art History

Chinese Language and Literature

Classical Civilization

Classics

Emphases:

Greek

Latin

Linguistics

Comparative Literature  
East Asian Cultures  
English

Emphases:

Literary Criticism  
Writing

Film Studies

French

German

Emphases:

Literature  
Linguistics

History

Humanities (Interdisciplinary)

Japanese Language and Literature

Philosophy

Russian

Spanish

Emphases:

Literature and Culture  
Linguistics  
Bilingualism

Minors:

Art History

Chinese Language and Literature

Classical Civilization

Comparative Literature

English

Film Studies

French

German

Greek

History

Italian

Japanese Language and Literature

Latin

Philosophy

Portuguese

Russian

Spanish

Concentration:

Medieval Studies (in combination with any major in the School of the Arts or the School of Humanities)

## DEPARTMENT OF INFORMATION AND COMPUTER SCIENCE

Major: Information and Computer Science

Specializations:

Artificial Intelligence  
Computer Systems  
Implementation and Analysis of Algorithms  
Information Systems  
Networks and Distributed Systems  
Software Systems

## INTERDISCIPLINARY STUDIES

Major:

Women's Studies

Minors:

African-American Studies

Asian American Studies

Chicano/Latino Studies

Global Peace and Conflict Studies

Global Sustainability

History and Philosophy of Science

Latin American Studies

Native American Studies

Religious Studies

Women's Studies

## GRADUATE SCHOOL OF MANAGEMENT

Major: Only graduate degrees are offered

Minor: Management

3-2 Program: available to outstanding undergraduates in all majors except those offered by the School of Engineering.

## SCHOOL OF PHYSICAL SCIENCES

Majors:

Chemistry

Mathematics

Specialization:

Mathematical Statistics

Physics

Concentrations:

Applied Physics

Biomedical Physics

Specialization:

Astrophysics

Minor:

Mathematics

## SCHOOL OF SOCIAL ECOLOGY

Majors:

Criminology, Law and Society

Environmental Analysis and Design

Psychology and Social Behavior

Social Ecology

Applied Ecology (offered jointly with the School of Biological Sciences)

Minors:

Criminology, Law and Society

Environmental Analysis and Design

Environmental Design

Epidemiology and Public Health

Psychology and Social Behavior

Urban and Regional Planning

## SCHOOL OF SOCIAL SCIENCES

Majors:

Anthropology

Comparative Culture\*

Economics

Geography\*

Linguistics

Political Science

Psychology

Social Science

Specializations:

Multicultural Studies

Public and Community Service

Research and Analytical Methods

Social Studies

Sociology

Minors:

Anthropology

Comparative Culture\*

Linguistics

Political Science

Psychology

Sociology

\*Admission to this program is unavailable.

## AREAS OF GRADUATE STUDY

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

### School of the Arts

Acting  
Choral Conducting  
Dance  
Design and Stage Management  
Directing  
Drama  
Instrumental Performance  
Music  
Music Composition  
Piano Performance  
Studio Art  
Vocal Performance

### School of Biological Sciences

Anatomy and Neurobiology<sup>1</sup>  
Biological Chemistry<sup>1, 2</sup>  
Biological Sciences  
Developmental and Cell Biology<sup>2</sup>  
Ecology and Evolutionary Biology  
Microbiology and Molecular Genetics<sup>1, 2</sup>  
Molecular Biology and Biochemistry<sup>2</sup>  
Physiology and Biophysics<sup>1, 2</sup>  
Protein Engineering Science<sup>3</sup>  
Psychobiology

### Department of Education

Educational Administration  
Multiple Subject Instruction (elementary)<sup>4</sup>  
Single Subject Instruction (secondary)<sup>4</sup>  
Bilingual Crosscultural Language and Academic Development (BCLAD) Emphasis in Spanish<sup>4</sup>  
Crosscultural Language and Academic Development (CLAD) Emphasis<sup>4</sup>  
Preliminary Administrative Services<sup>4</sup>  
Professional Administrative Services<sup>4</sup>

### School of Engineering

Chemical and Biochemical Engineering  
Civil Engineering  
Electrical and Computer Engineering  
Environmental Engineering  
Materials Science and Engineering  
Mechanical and Aerospace Engineering  
Protein Engineering Science<sup>3</sup>

### School of Humanities

Art History  
Chicano/Latino Literature  
Chinese Language and Literature  
Classics  
Comparative Literature  
Creative Writing: Poetry or Fiction  
Critical Theory  
East Asian Cultural Studies  
East Asian Languages and Literatures

English and American Literature  
French  
German  
Greek  
History  
History and Philosophy of Science  
Humanities  
Japanese Language and Literature  
Latin  
Logic and Methodology  
Philosophy  
Spanish  
Spanish Literature  
Spanish-American Literature

### Department of Information and Computer Science

Artificial Intelligence  
Computer Algorithms and Data Structures  
Computer Software  
Computer Systems Design  
Computing, Organizations, Policy, and Society  
Information and Computer Science

### Interdisciplinary Programs

Feminist Studies<sup>5</sup>  
Transportation Science

### Graduate School of Management

Administration  
Business Administration  
Management

### School of Physical Sciences

Chemistry  
Earth System Science  
Mathematics  
Physics  
Protein Engineering Science<sup>3</sup>

### School of Social Ecology

Criminology, Law and Society  
Environmental Analysis and Design  
Environmental Health Science and Policy  
Health Psychology  
Human Development  
Social Ecology  
Urban and Regional Planning

### School of Social Sciences

Anthropology  
Cognitive Sciences  
Comparative Culture<sup>6</sup>  
Economics  
Linguistics  
Mathematical Behavioral Science  
Political Psychology  
Political Science  
Politics and Society  
Psychology  
Public Choice  
Social Networks  
Social Relations

<sup>1</sup> School of Biological Sciences and College of Medicine joint program.

<sup>2</sup> Combined program in Molecular Biology, Genetics, and Biochemistry.

<sup>3</sup> Available in conjunction with the Ph.D. programs in Biological Sciences, Chemistry, and Engineering.

<sup>4</sup> Credential program.

<sup>5</sup> Available in conjunction with the programs in Anthropology, Art History, Drama, East Asian Languages and Literatures, English and Comparative Literature, French, German, History, Social Relations, Sociology, Spanish, and Studio Art.

<sup>6</sup> Admission to this degree program is unavailable.

Social Science  
Sociology  
Transportation Economics

### College of Medicine

Anatomy and Neurobiology<sup>1</sup>  
Biological Chemistry<sup>1, 2</sup>  
Environmental Toxicology  
Genetic Counseling  
Medical Residency Programs  
Medical Scientist Program  
Medicine  
Microbiology and Molecular Genetics<sup>1, 2</sup>  
Pharmacology and Toxicology  
Physiology and Biophysics<sup>1, 2</sup>  
Radiological Sciences

<sup>1</sup> School of Biological Sciences and College of Medicine joint program.

<sup>2</sup> Combined program in Molecular Biology, Genetics, and Biochemistry.

## 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 Division of Undergraduate Education, 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 considered. For these reasons, it is desirable for students to plan their programs carefully and thoughtfully, seeking a balance between exposure to a variety of academic areas and completion of courses which are prerequisite to a major under consideration. A qualified student interested in two areas of study may graduate with a double major by fulfilling the degree requirements of any two programs. Certain restrictions may apply; students 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 prerequisites, program planning, and policies and procedures. In addition, a form called the Undergraduate Petition for Change of Major must be completed. The form is available from academic counselors and the Registrar's Office.

### Undecided/Undeclared Students

Students who enter the University as freshmen or sophomores may be uncertain about which major they should choose and may not feel ready to declare their major until they have been on campus for a while. Such students participate in the General Studies Advising Program (GSAP) which is administered by the Division of Undergraduate Education. 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, students should know what programs UCI offers and have some experience with them, have a good knowledge of their own abilities and interests, have clear educational goals, and have a good sense of their vocational goals and of the academic programs at UCI that will provide appropriate preparation. 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 graduate education and/or possible careers.

To assist students in choosing a major, GSAP has created a two-quarter required course designed to expose undecided/undeclared students to a variety of opportunities and resources available to them on the campus, and to introduce students to each of the schools and majors offered. In addition, students learn about research and career opportunities within different disciplines.

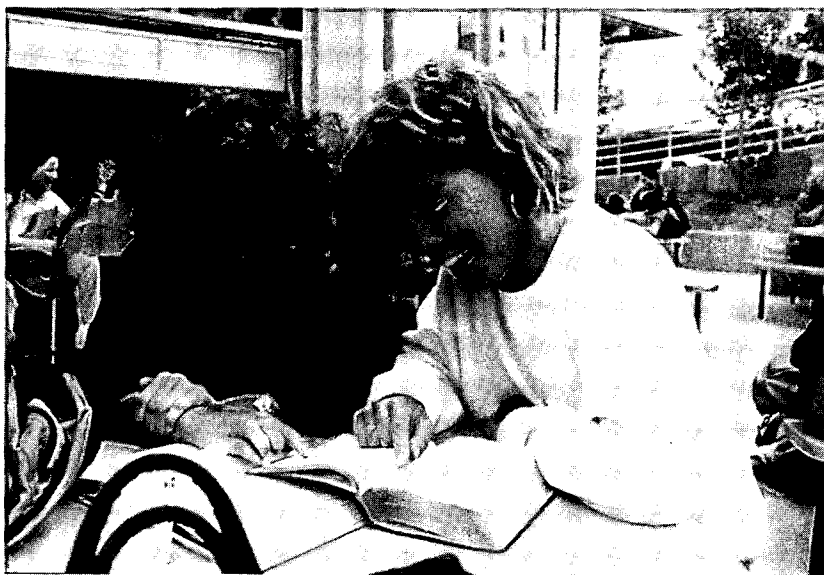
GSAP is located in 256 Administration Building; telephone (714) 824-6987.

### Courses in Undergraduate Education

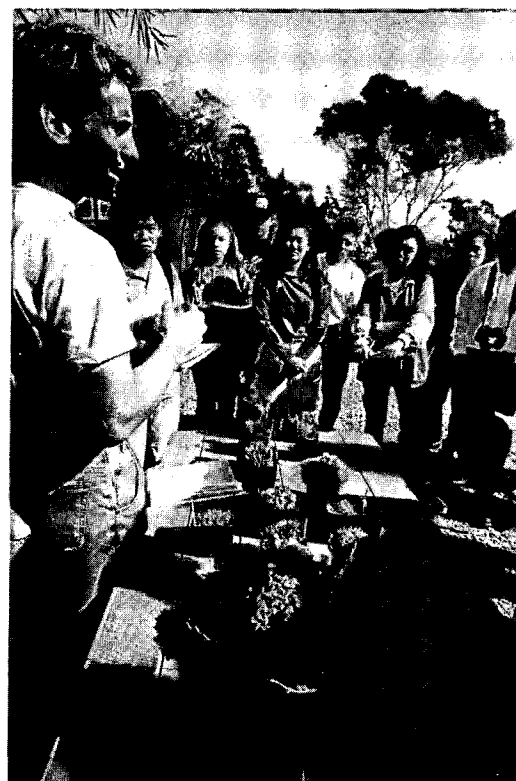
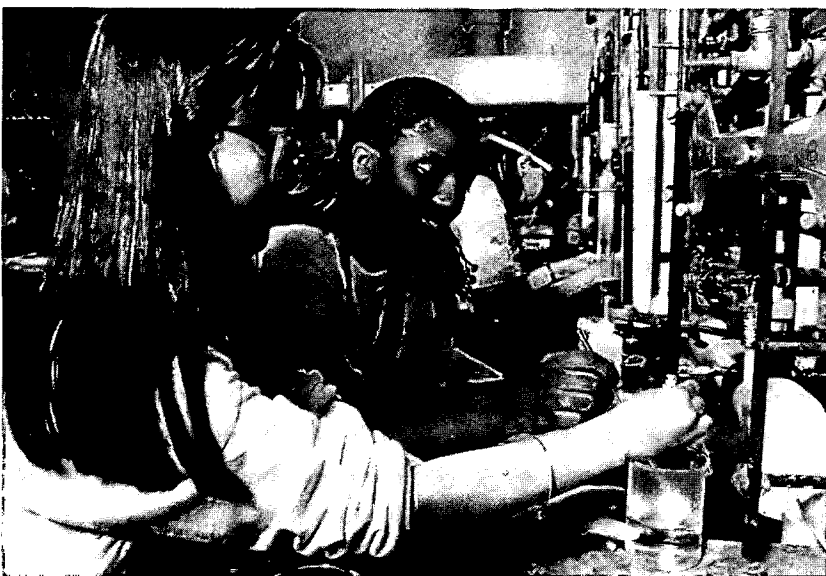
**University Studies 1A-B University Experience: Issues and Options for Undecided/Undeclared Students (2-2).** Introduces new undecided/undeclared freshmen to university issues, resources, and options as they learn about the academic undergraduate culture at UCI. Two-quarter course emphasizes necessary skills and tools for being a successful student, followed by a systematic exploration of UCI's undergraduate majors with a focus on decision-making skills.

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





*UCI students are encouraged to participate in research, independent study, creative activities, and field study to complement their classroom experiences. Many departments offer special programs and courses that integrate these activities into the curriculum.*



## 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 should consult the graduate advisor or academic counselor in the academic unit corresponding to the area of interest. Also, the Career and Life Planning Center frequently sponsors seminars on specific career areas and offers a number of services useful to those considering graduate or professional study.

## 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 Law School Admissions Test (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 School of Social Ecology offers many law-related courses in both substantive law (such as environmental and criminal law) and in law and society and criminal justice. The School also 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, 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 UCI 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 non-science 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 Medical College Admission Test (MCAT), the Dental Admission 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 leadership ability, strong problem-solving skills, the ability to successfully deploy and manage information technologies, effective oral and written communication skills, analytical skills, an understanding of global economic trends, and a basic knowledge of behavioral processes in organizations.

Although UCI does not offer a prebusiness program leading to an undergraduate degree in business, 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. Students are encouraged to undertake intensive course work in the culture, history, geography, economy, politics, and language of specific foreign countries.

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

work experience is becoming an increasingly important prerequisite for many programs.

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

## 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.

### 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	Stage Management
Environmental Design	Teaching
Instrument Repair/Tuning	Tourism
Interior/Industrial Design	Visual Resources Management
Journalism	Writing

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

### Biological Sciences Career Areas

Bioanalysis	Oceanography
Biochemistry	Optometry
Biomedical Engineering	Osteopathy
Cell Biology	Plant Biology
Chiropractic Medicine	Pharmacology
Dentistry	Pharmacy
Developmental Biology	Physician's Assistant
Dietetics	Physical Therapy
Environmental Management	Podiatry
Forestry	Public Health
Genetic Engineering	Quality Control
Health Administration	Research
Industrial Hygiene	Sales
Marine Biology	Speech Pathology
Medical Technology	Teaching

Medicine  
Microbiology  
Nurse Practitioner  
Occupational Therapy

Technical Writing and  
Editing  
Veterinary Medicine

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

### Engineering Career Areas

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

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 Aerospace, Chemical, Civil, Computer, Electrical, Environmental, or Mechanical Engineering, as well as a general program in Engineering. However, they will frequently find challenging positions in related areas such as biomedical 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.

### 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, medicine (with proper prerequisites), or public administration. Business and industry utilize Humanities graduates for management training programs in banking, retail sales, and insurance. Graduates with special skills in oral and written communications may look to positions with newspapers, advertising agencies, public relations firms, radio and television stations, and publishing houses.

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

### Information and Computer Science Career Areas

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

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

### Physical Sciences Career Areas

Actuarial Science	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 to a variety of areas in research, teaching, and management. Career opportunities for physical scientists are found in federal, state, and local government as well as in private industry.

Chemists may work in research and development and in jobs dealing with health, pollution, energy, fuel, drugs, and plastics. Water districts, crime labs, and major chemical and oil companies are also good resources for employment. 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 of the School of Social Ecology may hold positions as urban planners, environmental consultants, juvenile probation officers, counselors, elementary and secondary school teachers, legal aides, coordinators of juvenile diversion programs, social workers, mental health workers, special education teachers, or architectural consultants. Many School of Social Ecology graduates have used their training to enter graduate programs and obtain degrees in the fields of law; clinical, community, social, developmental, and environmental psychology; public health; public and business administration; environmental studies; urban planning; social welfare; criminology; and the administration of justice.

### Social Sciences Career Areas

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

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



## SPECIAL PROGRAMS

### Educational Opportunity Program

UCI recognizes and values the contributions of a student community that reflects the cultural, ethnic, and socioeconomic diversity of the people of California. The Educational Opportunity Program (EOP) provides pre-University programs and services aimed at increasing the eligibility rates for socioeconomically disadvantaged students. Qualification for EOP is based primarily on family income level, and all students served by the program must be California residents, with the exception of American Indian students.

EOP programs and services are located in the Office of Admissions and Relations with Schools and in the Center for Educational Partnerships; telephone (714) 824-7484; e-mail: oars@uci.edu.

**Admission.** Outreach counselors in the Office of Admissions and Relations with Schools visit high schools and community colleges throughout California and meet with prospective students, parents, teachers, counselors, and school officials to discuss the admission and financial aid process, housing, and the academic opportunities available at UCI.

Prospective students indicate their interest in being considered for EOP services on the *UC Undergraduate Application for Admission* and must provide the information requested. Application fee waivers are available for low-income applicants who meet the eligibility criteria.

**Housing.** UCI guarantees on-campus housing to all new EOP 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 Student Academic Advancement Services (SAAS). SAAS and the California Alliance for Minority Participation in Science, Engineering, and Mathematics (CAMP) offer a variety of services to EOP students once they enroll at UCI including advising, tutoring, and learning skills services.

### Center for Educational Partnerships

The Center for Educational Partnerships supports cooperative educational partnerships among UCI and California schools and colleges, and provides pre-enrollment services to prospective students.

**Partnership Programs.** The Partnership Network, an academic collaboration including UCI, K-12 schools, and postsecondary institutions, was established to encourage and develop creative leadership through various forums and to bring to light the best understanding of effective educational practices, paradigms, and structures.

Project STEP (Student/Teacher Educational Partnership) is a regional model of institutional collaboration from K-16 to improve the college attendance rates of minority students. Participating campuses include UCI, California State University at Fullerton, Rancho Santiago College, Chapman College, and the Santa Ana Unified School District.

Santa Ana Networks includes activities which focus on increasing the educational achievement of at-risk youth and is based on the premise that the educational system must reach and serve students in new far-ranging ways, and engage partners who are equally committed to student success. This is accomplished on the strength of two existing programs, Project STEP, which is mentioned above, and Santa Ana 2000, a business/community/citywide partnership.

Summer Scholars Transfer Institute, a collaborative Rancho Santiago College/UCI residential summer institute, facilitates the transfer of at-risk students to a four-year university and is a successful model of two institutions working together to provide academic readiness.

**Pre-College Initiatives and Services.** The Center for Educational Partnerships promotes statewide pre-college initiatives that help disadvantaged students develop the academic skills and background needed to enter college. These initiatives include Mathematics, Engineering, Science Achievement (MESA); Young Black Scholars; Upward Bound; and California Student Opportunity and Access Program (Cal SOAP). Call (714) 824-7482 for information.

Early Academic Outreach and Academic Development Partnerships provide pre-enrollment services. Early Academic Outreach development programs assist intermediate and high school students to become aware of academic 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. Call (714) 824-7482 for information.

The Academic Development Partnerships division is dedicated to improved student academic preparation for college success through establishment of K-12/college/university academic partnerships. Staff generate extramural support for discipline-specific initiatives for curriculum reform, professional development, and student academic services. Call (714) 824-6596 for information.

In addition, the Educational Opportunity Program and Center for Educational Partnerships are aligned with the California Alliance for Minority Participation in Science, Engineering, and Mathematics (CAMP), a program for students interested in these disciplines. CAMP provides research opportunities for undergraduates, faculty mentoring, and peer group support. Call (800) 359-2579 or (714) 824-3479 for information.

### Student Academic Advancement Services

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

### 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 programs and services for new and continuing graduate students. Eligibility for merit-based fellowships 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 advisement and support to ensure that all students will have the opportunity to attain their academic objectives.

### Medical Student Support Programs

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

students who have the potential of service to the medically underserved communities in California.

Additional information is available in the College of Medicine section.

## EXPENSES AND FEES

### Estimated Expenses

The range of estimated nine-month expenses, including fees, for students attending UCI during the 1996-97 academic year are shown below; fees are subject to change.

Student Status	Living Arrangement	Estimated Nine-Month Expenses <sup>1</sup>
Undergraduate	On Campus	\$ 12,755
	Off Campus	13,045
	At Home	9,310
Graduate	On Campus	14,800
	Off Campus	16,740
	At Home	10,565
M.B.A. (new students)	On campus	18,800
	Off campus	20,740
	At Home	14,565
Fully Employed Program		26,585
Executive Program		28,580
First-Year Medical <sup>2</sup> (10 months)	On Campus	19,017
	Off Campus	22,515
	At Home	15,817

<sup>1</sup> Student expense detail is available from the Office of Financial Aid and from the College of Medicine Financial Aid Office. Expenses are subject to change and do not include Nonresident Tuition.

<sup>2</sup> Estimated expenses for second-, third-, and fourth-year medical students are available from the College of Medicine Financial Aid Office.

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.

### Fees

Fees for the 1996-97 academic year are shown in the accompanying table. Student fees are based on three quarters of attendance. Third- and fourth-year medical students attend four quarters.

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.

Fees for Academic Year 1996-97 <sup>1</sup>	Undergraduate	Graduate and Medical <sup>2</sup>
University Registration Fee <sup>3</sup> .....	\$ 713.00	\$ 713.00
Educational Fee <sup>3</sup> .....	\$ 3,086.00	\$ 3,086.00
Associated Students Fee .....	\$ 39.00	\$ —
Associated Graduate Students Fee <sup>4</sup> .....	—	\$ 27.00
UCI Student Center Fee .....	\$ 142.50	\$ 142.50
Bren Events Center Fee .....	\$ 69.00	\$ 69.00
Graduate Student Health Insurance Fee .....	—	\$ 807.00
<b>Total for California Residents</b> .....	<b>\$ 4,049.50</b>	<b>\$ 4,844.50</b>
Nonresident Tuition .....	<b>\$ 8,394.00</b>	<b>\$ 8,394.00</b>
<b>Total for Nonresidents</b> .....	<b>\$ 12,443.50</b>	<b>\$ 13,238.50</b>

<sup>1</sup> Student fees are based on three quarters of attendance. Third- and fourth-year medical students attend four quarters; summer quarter fees of \$1,192.50 for these medical students are not included in this table. 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*.

<sup>2</sup> The fee level shown does not include the Professional School Student Fee, which is \$6,000 for M.B.A. students who enroll fall 1996 or later, and \$4,376 for M.D. students who enroll fall 1996 or later. Students who enrolled prior to fall 1996 should consult the *Schedule of Classes* for their fee level. All medical students pay an additional fee of \$61 for Medical Student Disability Insurance.

<sup>3</sup> Subject to change without notice by the Regents of the University of California.

<sup>4</sup> The Associated Graduate Students Fee is \$42 for Graduate School of Management and Medical students.

### 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, with the exception of students who are participating in the PACE Plan. The PACE Installment Plan allows students to spread the quarterly costs of fee payment over a three-month period. A fee is charged for this privilege. Information about PACE is available from Campus Billing Services, 109 Administration Building; telephone (714) 824-2455.

For information on how to cancel or withdraw from UCI, see the sections on Fee Refunds and on Enrollment and Other Procedures.

The **University Registration Fee** is \$238 per quarter for the fall and winter quarters and \$237 for the spring 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 (this deposit is known as the 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 \$1,029 per quarter for the fall and winter quarters and \$1,028 per quarter for the spring 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 **Associated Students Fee** is \$13 per quarter for undergraduates, \$9 per quarter for graduates, and \$14 per quarter for medical and Graduate School of Management students. The undergraduate student fee is administered by the Associated Students of UCI; the graduate student fee is administered by the Associated Graduate Students; the medical student fee is administered by the Associated Medical Students; and the GSM student fee is administered by the Graduate School of Management Student Association. 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.

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 \$807 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 \$807 annually. The annual fee is charged over three quarters, fall, winter, and spring to provide 12-month coverage from September through August. 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.

The **Medical Student Disability Insurance Fee** is \$61 annually. The entire annual fee is charged for the fall quarter. The fee is required of all medical students.

The **Professional School Student Fee** is required of all M.B.A. degree program students who enrolled fall 1994 or later and all M.D. degree program students, regardless of the number of courses taken. For M.B.A. students who enroll fall 1996 or later, the fee is \$2,000 per quarter for fall, winter, and spring quarters. For M.D. students who enroll fall 1996 or later, the fee is \$1,460 for the fall quarter and \$1,458 per quarter for the winter and spring quarters. M.B.A. and M.D. students who enrolled prior to fall 1996 should consult the *Schedule of Classes* for their fee level.

A \$500 advance deposit on the Professional School Student Fee is required of all new M.B.A. students upon their acceptance of admission. This deposit is nonrefundable.

### 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) pay the full University Registration Fee and one-half the Educational Fee. Those part-time students who have been determined to be nonresidents of the State of California are assessed one-half the Nonresident Tuition, in addition to the full Registration Fee and one-half the Educational Fee. Part-time students pursuing a professional degree are assessed one-half the Professional School Student Fee. Part-time students pursuing a duplicate bachelor's degree are assessed one-half the duplicate degree fee.

Students seeking part-time status must obtain the approval of the appropriate academic dean. Part-time status can be granted only

for reasons of occupation, 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. For more information, please refer to the *Schedule of Classes*.

### Duplicate Degree Fee

The Duplicate Degree Fee is \$2,000 per quarter for fall, winter, and spring quarters. The fee is required of students who enrolled fall 1994 or later, who have earned a baccalaureate or higher degree, and who attend the University to obtain instruction at the baccalaureate level. These students pay the Duplicate Degree Fee, which is equivalent to the marginal cost of instruction (currently \$6,000 annually). Students who are charged the fee are ineligible to receive University-funded financial aid. Students exempt from paying this fee are those who: are enrolled in joint degree and double major programs; are seeking post-baccalaureate degrees, including education credentials or certificates; are nonresident students paying nonresident tuition; and are in certain categories of low-income students, as defined in state law.

### Miscellaneous Fees

Application Fee <sup>1, 2</sup>	\$ 40.00
Application Fee for Readmission <sup>1</sup>	40.00
Advancement to Candidacy for Ph.D.	50.00
Duplicate Diploma	22.00
Duplicate Diploma, College of Medicine	75.00
Filing Fee (graduate programs)	119.00
M.B.A. Acceptance of Admissions Deposit <sup>1</sup>	500.00
Special Library Borrowing Privilege	50.00
(per year, nonrefundable, renewable)	
Transcript of Record (per copy)	3.00
Undergraduate Acceptance of Admission Fee <sup>1</sup>	100.00
(applied toward University Registration Fee)	
Verification of Student Status (per copy)	3.00

### Service Charges

OCTA Bus Coupon Book (10 rides) <sup>3</sup>	\$ 5.00
OCTA Bus Passes for students (monthly) <sup>3</sup>	13.00
Changes in Class Enrollment after Announced	3.00
Dates (each transaction)	
Credit by Examination (each petition)	5.00
Late Payment of Registration Fees	25.00 / 50.00
Late Enrollment in Classes	25.00 / 50.00
Returned Check Collection	10.00
Parking Fees <sup>4</sup>	
Student preferred, annual purchase only <sup>5</sup>	387.00
Student general, quarterly	81.00
annual <sup>5</sup>	216.00
Student resident, quarterly	81.00
annual <sup>5</sup>	216.00
System of Interactive Guidance (SIGI) Fee	20.00

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

<sup>1</sup> Nonrefundable in all cases.

<sup>2</sup> The \$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 selected.

<sup>3</sup> Sold through the UCI Parking and Transportation Services Office.

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

<sup>5</sup> Fall, winter, and spring quarters.

## CALIFORNIA RESIDENCE AND THE NONRESIDENT TUITION FEE

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

### Laws Governing Residence

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

### Who Is a Resident?

Adult students (at least 18 years of age), may establish residence for tuition purposes in California if they are a: (1) U.S. citizen; (2) permanent resident or other immigrant; or (3) a nonimmigrant who is not precluded from establishing a domicile in the U.S. This includes nonimmigrants who hold valid visas of the following types: A, E, H-1, H-4, I, K, L, O-1, O-3, or R.

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

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

Residence cannot be derived from a spouse or parents.

### Requirements for Financial Independence

Students are considered "financially independent" if they fall into at least one of the following categories:

1. At least 24 years of age by December 31 of the calendar year for which residence classification is requested.
2. Veteran of the U.S. Armed Forces.
3. A ward of the court or both parents are deceased.
4. Have legal dependents other than a spouse.
5. A married student, or a graduate student, or a professional student who was not claimed as an income tax deduction by parents or any other individual for the tax year immediately preceding the term for which resident classification is requested.
6. An unmarried undergraduate student not claimed as an income tax deduction by parents or any other individual for the two tax years immediately preceding the term for which resident classification is requested and can demonstrate self-sufficiency for those years.

NOTE: Financial dependence is not a factor in residence status for graduate student instructors, graduate student teaching assistants, research assistants, junior specialists, postgraduate researchers, graduate student researchers, and teaching associates who are

employed 49 percent or more of full time in the term for which resident classification is requested.

### Establishing Intent to become a California Resident

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

### General Rules Applying to Minors

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

### Specific Rules Applying to Minors

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

### Exemptions from the Nonresident Tuition Fee

Students for which the following conditions apply may be eligible to an exemption from the Nonresident Tuition Fee.

1. **Member of the Military.** A student who is a member of the United States military stationed in California on active duty, unless assigned for educational purposes to a state-supported institution of higher education.

2. **Child or Spouse of a Member of the Military.** A student who is the natural or adopted dependent child or spouse of a member of the United States military stationed in California on active duty, unless the member of the military is assigned for educational purposes to a state-supported institution of higher education.
3. **Child or Spouse of a Faculty Member.** To the extent that funds are available, a student who is the unmarried, dependent child under the age of 21 or the spouse of a University of California faculty member who is a member of the Academic Senate.
4. **Child or Spouse of a University Employee.** A student who is the unmarried, dependent child under the age of 21 or the spouse of a full-time employee of the University of California who is permanently assigned to work outside the state of California (i.e., Los Alamos National Laboratory).
5. **Child of a Deceased Public Law Enforcement or Fire Suppression Employee.** A student who is the child 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.
6. **Dependent Child of a California Resident.** A student who has not been an adult resident for more than one year and is the natural or adopted dependent child of a California resident who has been a resident for more than one year immediately prior to the residence determination date. The student must also maintain full-time attendance in a California public postsecondary institution.
7. **Graduate of a California school operated by the Federal Bureau of Indian Affairs (B.I.A.).** A student who is a graduate of a California school operated by the B.I.A. (i.e., Sherman Indian High School) and who enrolls at the University of California.

### Temporary Absences

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

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

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

### Petition for Resident Classification

A Petition for Resident Classification *must* be filed in person at the Office of the Registrar by the applicable deadline to be eligible for

a change of classification from nonresident to resident for tuition purposes. Specific filing deadline dates for each quarter are printed in the *Schedule of Classes*. *Late petitions will not be accepted.*

### Time Limitation on Providing Documentation

Students may be allowed a period of time no later than the end of the quarter to provide additional documentation required for residence classification.

### Incorrect Classification

Any student found to be incorrectly classified as a resident is subject to nonresident classification and to payment of all Nonresident Tuition Fees not paid. If a student has concealed information or furnished false information and was classified incorrectly as a result, the student is also subject to University discipline. Resident students who become nonresidents of California must immediately notify the UCI Residence Deputy.

### Inquiries and Appeals

Inquiries regarding residence requirements, determination, and/or recognized exceptions should be directed to the Residence Deputy, Office of the Registrar, 215 Administration Building, University of California, Irvine, CA 92697-4975, telephone (714) 824-6129, or to the Legal Analyst, Residence Matters, 300 Lakeside Drive, 7th Floor, Oakland, CA 94612-3565. *No other University personnel are authorized to supply information relative to residence requirements for tuition fee purposes.*

This summary is *not* a complete explanation of the law regarding residence classification. A copy of the regulations adopted by The Regents of the University of California is available for inspection in the Office of the Registrar. Changes may be made in the residence requirements between the publication of this statement and the relevant residence determination date. Any student, following a final decision on residence classification by the Residence Deputy, may appeal in writing to the Legal Analyst within 45 days of notification of the Residence Deputy's final decision.

## 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 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.** Through 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, Duplicate Degree Fee, and Nonresident Tuition Fee (if applicable) is prorated as shown.

**Continuing and Returning Undergraduate and New, Continuing, and Returning Graduate Students.** Through 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 Medical Student Disability Insurance Fee (if applicable) is handled on an on-request basis. The refund of the Registration Fee, Educational Fee, Professional School Student Fee (if applicable), Associated Students or Associated Graduate Students Fee, UCI Student Center Fee, Bren Events Center Fee, Duplicate Degree Fee, and Nonresident Tuition Fee (if applicable) is prorated as shown.

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

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 three to four weeks after the official notice of withdrawal is initiated.

Students who are receiving financial aid and withdraw from UCI during a quarter will have all or part of the fee refund credited to the appropriate financial aid fund. Any cash disbursements, other than work-study, that a student received may also require repayment. The refund amount for new students who receive Title IV Federal financial assistance and withdraw during their first term at UCI is calculated as shown below. Students withdrawing who received loans must schedule an exit interview with the Financial Services Office at (714) 824-7081.

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

### 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; more than 60 percent of UCI's enrolled students receive some form of financial aid. Students who demonstrate that they need financial assistance in order to attend may be eligible for scholarships, grants, loans, and/or work-study awards through the Financial Aid Office. In addition to awarding aid on the basis of financial need, some scholarships are awarded on the basis of academic excellence.

Information regarding the application process, deadlines, and financial aid programs for undergraduate, graduate, and medical students may be found in the *Financial Aid at UCI* handbook. The handbook is mailed to entering students in December and is available to continuing students in January in the Financial Aid Office, 102 Administration Building; telephone (714) 824-8262.

**Free Application for Federal Student Aid (FAFSA/Renewal Application).** To obtain financial aid, new and continuing students must file the FAFSA/Renewal Application and the necessary supporting documents each year. The FAFSA is available at high schools, local colleges and universities, and at the UCI Financial Aid Office. Renewal applications are mailed to current financial aid recipients starting in mid-November and continuing through mid-December. Students are encouraged to apply as early as possible after January 1. 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 FAFSA and supporting documents determine 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 other than family residence; stocks, bonds, and other securities; business equity; and cash, savings, and checking accounts. Income includes wages, salaries, interest, dividends, and nontaxable income such as Social Security 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 extension, based on the availability of funds. Examples of such special expenditures include special equipment for students with disabilities.

### Eligibility Requirements

Federal financial aid programs are subject to regulations that define the criteria students must meet to qualify and maintain eligibility for those programs. The regulations state that a student must: (1) be a U.S. citizen or an eligible noncitizen of the U.S.; (2) be accepted for admission to the University; (3) be enrolled in good standing at the University; units taken through the University Extension program are not counted toward half- or full-time enrollment; (4) demonstrate financial need (except for Federal Direct Unsubsidized Stafford Loans and Federal PLUS loans); financial need is the difference between the reasonable and approved expenses of attending UCI and all available resources, including a contribution from parents, the student, and any outside aid; (5) maintain satisfactory academic progress for financial aid, as outlined below; (6) be registered with the Selective Service if the student is a male at least 18 years old, born after December 31, 1959, and not on active duty with the armed forces.

Once a student meets the above criteria, disbursement of financial aid funds is made only if the student does not have outstanding debts owed to UCI, has not defaulted on any loan received while attending any postsecondary institution, and does not owe a refund on any grant received at any postsecondary institution.

## 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, 1.85; second year, 1.90; third year, 1.95; fourth year, 1.975; fifth year, 2.00; graduate students: 3.0; medical students: 2.0.\*

\* Prior to June 1996, third- and fourth-year students must meet the minimum 2.0 GPA requirement. Effective June 1997, all students must meet the Academic Performance requirement necessary to pass courses.

**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	989	989
2	814	1,803
3	1,200	3,003
4	1,200	4,203

Medical Students—Extended Curriculum Clock-Hours:

Year	End of Year Total	Cumulative Total
1	494.5	494.5
2	494.5	989
3	814	1,803
4	1,200	3,003
5	1,200	4,203

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

*Undergraduate students:*

1. Entering freshmen are eligible for all types of financial aid for a total of 15 quarters of academic year attendance.
2. Advanced standing transfer students 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.

*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.

*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.

### 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/quarter 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/quarter of a course requiring more than two quarters/quarters 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.

**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.

### Satisfactory Academic Progress Appeals

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

## Appeals Procedure

Students wishing to appeal must submit the UCI Financial Aid Appeal 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 of Student and Resident Affairs in the preparation of appeals. They may also be required to submit a degree check, course plan, or letter from their dean.

**Undergraduate Students**—All relevant material will be presented to the Financial Aid Appeals Board (the Board is composed of Financial Aid professional staff). 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 Assistant Vice Chancellor 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 Assistant Vice Chancellor 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 Assistant Vice Chancellor 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 Assistant Vice Chancellor 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 seven top honors awards: Regents', University, Chancellor's Club, Alumni Association, Scholar's Circle, UC Irvine Scholar, or UCI Foundation Scholarships. The scholarships have stipends which range from \$250 to full in-state fees; 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 for Undergraduate Admission and Scholarships* and submit the application 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. Information about the Alumni Scholarship is available in the *UC Application for Undergraduate Admission and Scholarships*.

### 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.

### Restrictive Endowment Scholarships

Eligibility requirements for Restrictive Endowment Scholarships vary greatly and are restricted in terms of such student characteristics as geographic location, family background, academic major, and career goals. For the most part, these scholarship awards are based on the student's established financial need. All UCI students will be considered for Restrictive Endowment Scholarships based

upon information from the *UC Application for Undergraduate Admission and Scholarships* and their current academic records.

### Regents' Scholarships

Regents' scholarships, among the highest honors conferred upon UC students, are awarded on the basis of academic excellence and exceptional promise. Undergraduate students are eligible upon graduation from high school or upon completion of the sophomore year of college. Medical students are eligible during any year of their study in medical school. The scholarship is awarded both as an honorarium and a stipend. It may be renewed for an additional one or three years depending on the year of appointment, provided the student completes an average of 12 units per quarter and maintains a grade point average of at least 3.0. The honorarium is based upon year of appointment as a Regents' Scholar and is awarded without reference to financial need. The amount of the stipend will vary depending on the student's established financial need.

### University Scholarships

University scholarships are offered to students entering their freshman year who show evidence of high scholastic attainment. Students who demonstrate financial need may receive stipends funded by The Regents of the University of California. 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 up to full in-state fees.

**ROTC Scholarships:** See the Supplementary Educational Programs section.

## Grants

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

**Federal Pell Grant** is the largest federally funded grant program and provided up to a maximum of \$2,340 for the 1995-96 academic year. To be eligible, applicants must be U.S. citizens or eligible noncitizens, be enrolled as undergraduates, have not previously received a bachelor's degree, and demonstrate financial need. Students must use the FAFSA to apply for this grant.

**Cal Grant A** is a State-funded scholarship program which currently provides awards to be applied to the payment of University fees. In 1995-96 Cal Grant A awards paid up to \$3,799. To be eligible, applicants must be California residents and demonstrate financial need. Students must use the FAFSA 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 provided, in 1995-96, awards up to a maximum of \$1,410 during the student's first year and \$1,410 plus \$3,799 toward fees during subsequent years. To be eligible, applicants must be California residents, demonstrate financial need, and be entering college or not have completed more than one quarter of college work. Students must use the FAFSA 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.*

**Federal Supplemental Educational Opportunity Grant (FSEOG)** provides grant aid for U.S. citizens and eligible noncitizens who are undergraduate students and have demonstrated financial need.

These federal grants range from \$100 to \$4,000 per year, depending upon financial need.

**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. 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.

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.

**Federal 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 \$3,000 annually for undergraduates and \$5,000 annually for graduate students. Cumulative totals for the full term of college attendance may not exceed \$15,000 as an undergraduate and \$30,000 as a graduate student. The \$30,000 cumulative total includes loans received as an undergraduate student and Federal Perkins Loan funds received at all colleges or universities attended. 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 six 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 between June 30, 1993 and July 2, 1987, interest charges and repayment begin nine months after the borrower ceases to be enrolled or is enrolled less than half-time. 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 Regents of the University of California, provides long-term loans to full-time students who demonstrate financial need. The maximum amount for an academic year is \$3,000. Interest of five percent a year begins six months after the student ceases to be enrolled at least half-time, and repayment must be completed within ten years. Two cosigners are required.

### William D. Ford Direct Loan Program

**Federal Direct Stafford Loan** (formerly Guaranteed Student Loan), processed through the U.S. Department of Education and UCI, is available to undergraduate, graduate, and medical students who are U.S. citizens or eligible noncitizens, and who demonstrate financial need. During an academic year, the maximum a dependent student may borrow is: \$2,625, freshmen; \$3,500, sophomores; \$5,500, juniors and seniors. Independent students may borrow an annual maximum of: \$6,625, freshmen; \$7,500, sophomores; \$10,500, juniors and seniors; \$18,500, graduate and medical students. Students must advance a grade level during the academic year or be subject to a seven-month waiting period before becoming eligible to apply for another Federal Direct Stafford Loan. Both a guarantee and origination fee will be deducted from the amount of the loan prior to issuing the check.

Interest rates: The federal government pays interest during the deferment period. Interest rates are variable for loans to new borrowers with first disbursements on or after October 1, 1992, based on 91-day Treasury Bill plus 3.10 percent, capped at 8.25 percent. Borrowers will be charged a 3 percent origination fee and an insurance premium of 1 percent.

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: Dependent, undergraduate, \$23,000; independent, undergraduate, \$46,000; graduate and medical students, \$65,500 (includes undergraduate loans). Deferment period before repayment: Six months after ceasing to be enrolled at least half-time. Full repayment: Up to 10 years.

**Unsubsidized Federal Direct Stafford Loans for Middle-Income Borrowers** have the same terms and conditions as the Federal Direct Stafford Loan, including the annual and aggregate loans limits, interest rate, and repayment. However, the loan is not based on need. Students may borrow an amount equal to the cost of attendance less any estimated financial assistance up to the annual loan limits in effect at the time the loan is disbursed. Students must first apply for the Federal Direct Stafford Loan prior to consideration for the Unsubsidized Federal Direct Stafford Loan. There is no interest subsidy for the loan; students pay the interest charged while enrolled at UCI. Students may receive both subsidized and unsubsidized Federal Direct Stafford loans but the total may not exceed the loan limits. Borrowers with both types of loans may have a single repayment schedule.

Interest rates: Variable, adjusted annually, for loans to new borrowers with first disbursements on or after October 1, 1992, based on 91-day Treasury Bill plus 3.10 percent, capped at 8.25 percent. Borrowers will be charged a 3 percent origination fee and an insurance premium of 1 percent.

Cumulative maximum: Dependent, undergraduate, \$23,000; independent, undergraduate, \$46,000; graduate and medical students, \$73,000 (includes undergraduate loans). Deferment period before repayment: Interest accrues immediately and may be paid monthly or quarterly. Students also may request that the lender add the interest to the principal balance. Repayment of principal begins six months after ceasing to be enrolled at least half-time. Full repayment: Up to 10 years. Minimum payment: \$50 per month.

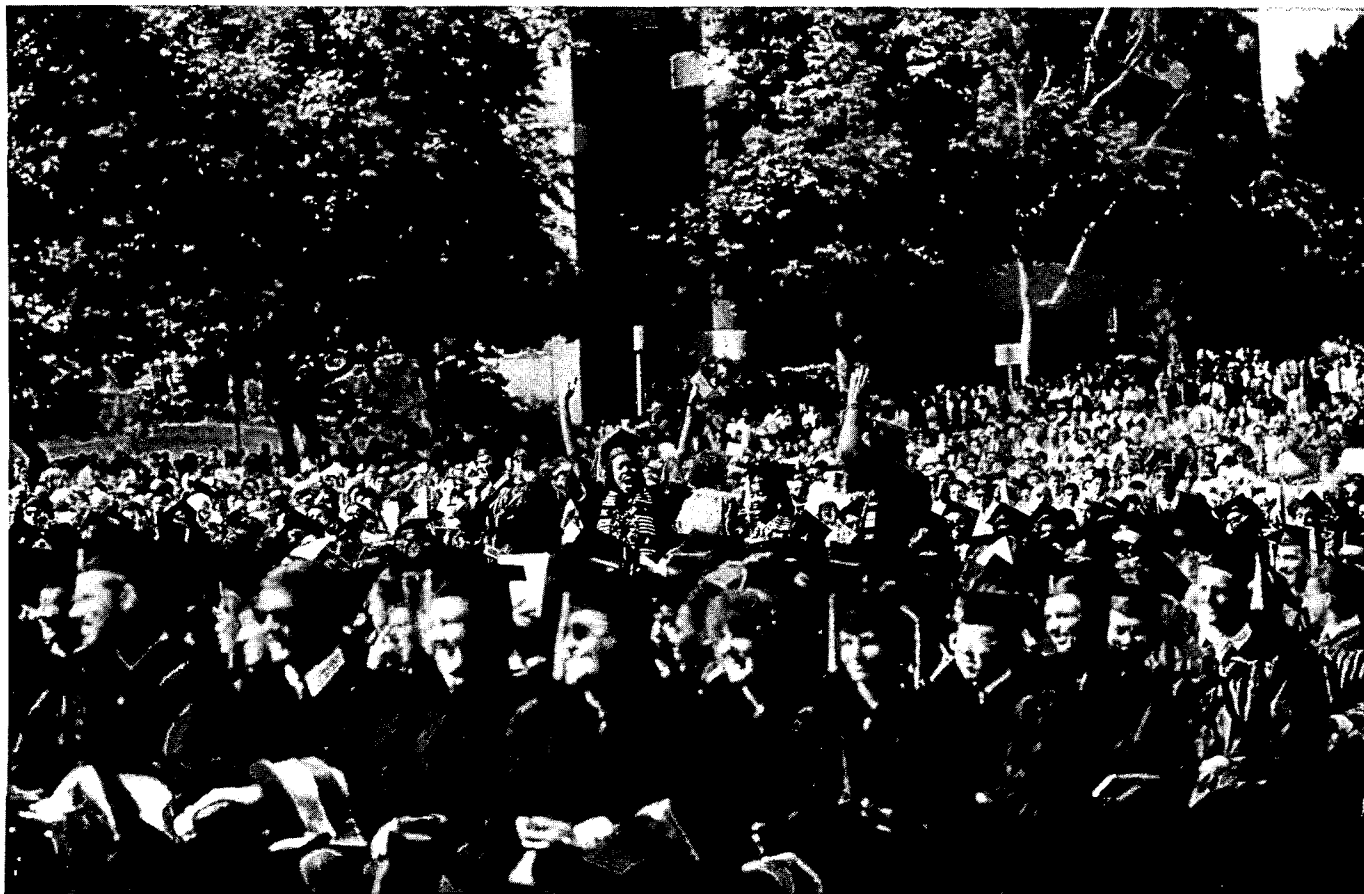
**Federal Direct Parent Loans for Undergraduate Students (FPLUS)** are designed to assist parents of dependent undergraduate students who are unable to demonstrate financial need for campus-based funds. Parents are eligible to borrow up to the cost of education for the academic year less any estimated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

Interest rate: Variable, adjusted annually, based on a 52-week Treasury Bill plus 3.1 percent not to exceed 9 percent. Borrowers will be charged a 3 percent origination fee and an insurance premium of 1 percent.

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

**Loans for Disadvantaged Students, Health Professional Student Loans (HPSL), and Primary Care Loans** are available to medical students. Contact the College of Medicine Financial Aid Office for information.

**Emergency loans** are made from an emergency student loan fund made possible through various philanthropic individuals and organizations. Undergraduate 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. 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.



*UCI awarded 3,137 bachelor's, 535 master's, 181 doctorate, and 85 medical degrees during the June 1995 Commencement ceremonies.*

### **Federal College Work-Study**

The Federal College Work-Study Program offers eligible students who demonstrate need an opportunity to pay for their living and educational expenses as they occur. By participating in the Federal College Work-Study Program, students can reduce the amount of the loan to be repaid after leaving school. Both undergraduate and graduate students are eligible for work-study awards. Medical students must obtain the approval of the Associate Dean of Student and Resident Affairs prior to obtaining work-study employment. Students awarded work-study have the choice of obtaining a work-study job either on campus or off campus at 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 is provided in the UCI Financial Aid Award notification sent to all UCI students receiving financial aid.

**Veterans Work-Study Program** is available only to U.S. military veterans and their eligible dependents. Positions are limited. Separate applications and detailed information are available from the UCI Veterans Student Services Office, 201 Student Services I; telephone (714) 824-6477.

### **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) 824-6761, 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, 206 Medical Education Building; telephone (714) 824-6476, 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 International Center for further information.

### **Aid for Students with Disabilities**

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

### **Student Employment**

The Career and Life Planning Center, located in the Student Services I building, 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 Center.

## UNDERGRADUATE ADMISSIONS

The Office of Admissions and Relations with Schools is responsible for the admission of new undergraduate freshman and transfer students. Inquiries may be addressed to the Office of Admissions and Relations with Schools, 204 Administration Building, University of California, Irvine, CA 92697-1075; telephone (714) 824-6703. The Office is open from 8:00 a.m. to 5:00 p.m., Monday through Friday.

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 study leading to a Bachelor of Arts, Bachelor of Music, or Bachelor of Science degree.

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

The University considers a **transfer** applicant as a student who has completed high school and who has been a registered student in a regular session of a college or university. Students who meet this definition cannot disregard their college record and apply as freshmen. To be considered as a **California community college transfer** applicant to UCI, a student must have earned at least 28 semester units from a California community college in the last two regular terms of enrollment.

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

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

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

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

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. Meeting eligibility requirements entitles an applicant to be considered for admission but does not constitute an offer of admission.

Since at UCI, as at most University of California campuses, the number of eligible applicants 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 freshman applicants selected solely on traditional academic criteria, all test scores, and high school grade point average. 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.

### SELECTION CRITERIA

All applicants from high school are ranked on a Selection Index which sums (a) the grade point average (multiplied by 1,000) attained on all high school academic courses, plus scores on (b) the SAT I (or the ACT equivalent), and (c) the three required SAT II examinations. Additional emphasis is placed on the strength of the curriculum which the applicant has elected, and has projected through the senior year. Admitted applicants should satisfy all published UC admission requirements prior to enrolling, and are expected to improve or maintain the level of performance reported in the application through the eleventh grade.

#### Academic Criteria

Sixty percent of freshman applicants to be admitted are identified solely on traditional criteria utilized in the Selection Index above.

In the case that UCI is unable to accommodate all qualified applicants in their first-choice major, students may be offered admission in another major. Therefore, all applicants are encouraged to indicate an alternate major on their *UC Application for Admission*. Students who wish to change their major after enrolling at UCI must file a change of major petition.

**Engineering:** Preference will be given to applicants who have four years of mathematics and who rank highest using the academic criteria.

**Biological Sciences:** There is a restriction on the number of applicants admitted directly into the major. Generally, preference is given to those who rank highest using the academic criteria.

**Psychology and Social Behavior (School of Social Ecology):** There is a restriction on the number of applicants admitted directly into the major. Generally, preference is given to those who rank highest using the academic criteria.

#### Supplemental Criteria

The remaining 40 percent of freshmen applicants to be admitted will be of lower Selection Index ranking, but their academic criteria will be augmented by evidence of academic backgrounds and motivation not adequately reflected by the Index. These include an



exceptionally challenging curriculum; accomplishments relevant to academic aims; a thoughtful match between UCI's offerings and the student's objectives; potential contributions to the campus; hardships, disabilities, or origins which have restricted the development of potential; and constraints on feasible educational alternatives.

## 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.

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 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 Admission by Examination Alone section. Meeting basic eligibility requirements entitles an applicant to be considered for admission but does not constitute an offer of admission.

### 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 and Relations with Schools will review and accept courses that meet the requirements for applicants graduating from out-of-State schools.

#### "A through F" Course Requirements

- a. **History/Social Science: 2 years required.** Two years of history/social science, including one year of U.S. history or one-half year of U.S. history and one-half year of civics or American government; and one year of world history, cultures, and geography.
- b. **English: 4 years required.** 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 required; 4 recommended.** 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: 2 years required; 3 recommended.** Two one-year courses in laboratory science providing knowledge in at least two of the fundamental disciplines of biology, chemistry, and physics. Two years of an integrated sciences program are acceptable provided the courses cover the basic concepts of two of the three fundamental disciplines. Laboratory courses in earth/space sciences are acceptable if they have as prerequisites or provide basic knowledge in biology, chemistry, or physics. Not more than one year of ninth-grade laboratory science can be used to meet this requirement.

- e. **Language Other Than English: 2 years required; 3 recommended.** 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 or four years of one language in preparation for the UCI language other than English breadth requirement.)

- f. **College-Preparatory Electives: 2 years required.** Two units (four semesters), in addition to those required in the "a–e" requirements chosen from the following 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.

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. An advanced-level course in English as a second language may be acceptable provided it meets the standards outlined under the "b" requirement.

**Advanced Mathematics:** Courses in mathematics with second-year algebra as a prerequisite such as trigonometry, linear algebra, pre-calculus (analytic geometry and mathematical analysis), calculus, combinatorics, 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.

An introductory science course normally offered 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.

## 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 above 2.81 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. Examination Requirements

All freshman applicants must submit examination scores as described below. *Students applying for admission for fall quarter should complete their examination requirements during May or June of their junior year or during their senior year, but no later than the December test date. (Typically, this means that students will take either the Scholastic Assessment Test I or the American College Test in October or November, and will take the Scholastic Assessment Test II 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 and Relations with Schools. The following examinations are required:

### 1. One Aptitude Test, either:

- The Scholastic Assessment Test I: Reasoning Test (SAT I): the verbal and mathematical reasoning scores submitted from this test must be from the same sitting; or
- The American College Test (ACT) composite score and

### 2. Three Scholastic Assessment Test II: Subject Tests (SAT II) examinations, which must include (a) writing, (b) math, level 1, 1C, or 2C, and (c) one from among English literature, language other than English, sciences, or social studies. The SAT II examination in Literature may not be substituted for the Writing Test.

### Admission by Examination Alone

A student can qualify as a freshman by examination alone. The required total score on the SAT I is 1,400<sup>1</sup>. (If the ACT is presented, the minimum score is 31.) Also, the student's total score on the three SAT II examinations must be 1,760<sup>2</sup> or higher, or at least 1,850<sup>3</sup> if a nonresident of California, with no score less than 530<sup>4</sup> on any individual SAT II examination. This option does not apply to students who will have completed more than 12 transferable units prior to admission. The SAT II examinations cannot be taken in academic subjects covered by transferable college courses a student may have taken. Freshman applicants who qualify for admission by examination alone may be required to present academic qualifications in addition to the test scores listed above.

<sup>1</sup> 1,300 if taken prior to April 1995.

<sup>2</sup> 1,650 if taken prior to May 1995.

<sup>3</sup> 1,730 if taken prior to May 1995.

<sup>4</sup> 500 if taken prior to May 1995.

### Eligibility Index

A-F GPA	ACT <sup>1</sup> or Composite	SAT I <sup>2</sup> Total	A-F GPA	ACT <sup>1</sup> or Composite	SAT I <sup>2</sup> Total
2.82	36	1590/1600	3.06	25	1030/1150
2.83	36	1570/1590	3.07	24	1010/1130
2.84	35	1540/1580	3.08	23	980/1110
2.85	35	1520/1570	3.09	23	960/1090
2.86	35	1500/1560	3.10	22	940/1070
2.87	34	1470/1550	3.11	22	910/1050
2.88	34	1450/1530	3.12	21	890/1030
2.89	33	1430/1510	3.13	21	870/1010
2.90	33	1400/1490	3.14	20	840/980
2.91	33	1380/1470	3.15	20	820/960
2.92	32	1360/1450	3.16	19	800/940
2.93	31	1330/1430	3.17	19	770/920
2.94	31	1310/1400	3.18	18	750/900
2.95	31	1290/1370	3.19	18	730/870
2.96	30	1260/1350	3.20	17	700/840
2.97	30	1240/1330	3.21	17	680/810
2.98	29	1220/1310	3.22	16	660/780
2.99	28	1190/1290	3.23	16	630/750
3.00	28	1170/1270	3.24	15	610/720
3.01	27	1150/1250	3.25	15	590/690
3.02	27	1120/1230	3.26	14	560/660
3.03	26	1100/1210	3.27	14	540/630
3.04	26	1080/1190	3.28	13	520/600
3.05	25	1050/1170	3.29	12	490/570

<sup>1</sup> ACT is scored in intervals of 1 point from a minimum of 1 to a maximum of 36.

<sup>2</sup> SAT I is scored in intervals of 10 points from a minimum of 400 to a maximum of 1,600. Use the first score listed if the SAT I was taken prior to April 1995. Use the second score if the test was taken April 1995 or later.

### 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. 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. The change of major petition must be filed with the Registrar by the third week of the quarter prior to full-time enrollment. Graduation requirements (UC, UCI, school, and major) for UPHSS students will be determined by the year of the first enrollment in a course as a UPHSS student. However, regulations limiting the ways in which matriculated students may fulfill the writing requirements (Subject A, lower- and upper-division) do not apply to UPHSS students until they enroll as regular UCI students after high school graduation.

If the UPHSS participant wishes to attend another University of California campus, the student must follow the regular admissions process and must complete a *UC Undergraduate Application*. High school students wishing more information about the program should contact the Office of Admissions and Relations with Schools 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. UCI considers a California community college transfer applicant as a student who has earned at least 28 semester units from a California community college in the last two regular terms of enrollment. 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 transfer applicants as possible, particularly as juniors. However, in circumstances where selectivity beyond UC eligibility is required, selection of the majority of transfer applicants is based upon GPA, transferable units, level of entry, type of school or origin, and depth of preparation for the major. Highest priority for admission is given to California-resident junior-level applicants from California Community Colleges. Junior transfers from four-year colleges, including other UC campuses, and lower-division transfers may be considered as space permits. Transfer applicants must complete required English composition and mathematics courses by the end of the term preceding enrollment at UCI (not including summer session).

In the case that UCI is unable to accommodate all qualified applicants in their first-choice major, those students who indicate a valid alternate major may be offered admission in that major. Students who wish to change their major after enrolling at UCI must file a change of major petition.

This is of particular importance to those who apply in majors which are subject to additional course prerequisites and/or have a limit placed on the number of applicants admitted into the major. (See below.)

**Biological Sciences:** A student seeking admission to the School of Biological Sciences from colleges and schools other than UCI must satisfy the University requirements for admission to advanced standing. Preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following required courses: a year of general chemistry with laboratory, an approved sequence of biological science courses, and an approved lower-division course in writing.

**Chemistry:** Preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of approved calculus and one year of general chemistry with laboratory.

**Economics:** Preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one-year of microeconomic and macroeconomic theory, a semester or two quarter courses of calculus, and an approved lower-division course in writing.

**Engineering:** Applicants must select either Aerospace Engineering, Chemical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Engineering (a general program of study which is open to upper-division students only), Environmental Engineering, or Mechanical Engineering as their major on the application. Preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of calculus, one year of engineering physics with laboratory, one semester or one year of general chemistry (whichever is required for the major), one course in computational methods, and one year of approved lower-division writing. See the School of Engineering section of this *Catalogue* for information on courses required for junior academic standing.

**Information and Computer Science:** Preference will be given to applicants with the highest grades overall, and who have satisfactorily completed the following required course work: one year of discrete mathematics or calculus, one year of computer science including a programming course in a modern high-level language (such as ADA, C, C++, Pascal), and an approved lower-division course in writing.

**Mathematics:** Preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the required course work of one year of approved calculus.

**Physics:** Preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of approved calculus and one year of calculus-based physics with laboratory.

**Psychology and Social Behavior (School of Social Ecology):** There is a limitation on the number of applicants admitted to the major. Generally, preference is given to junior-level applicants with the highest grades overall.

## 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.

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

**NOTE: New eligibility requirements take effect with students who will transfer to the University in fall 1998. The new requirements follow the current requirements listed below.**

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 average of 2.00 or better in all transferable course work.

**Applicants planning to transfer prior to fall 1998 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 meet minimum eligibility requirements 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 meet minimum eligibility to transfer 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 meet minimum eligibility requirements 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 nontransferable two-semester-unit or three-quarter-unit course in trigonometry; or a transferable mathematics course that employs the topics of intermediate algebra; or a transferable statistics course that has intermediate algebra as a prerequisite.

NOTE: For UCI, in fulfilling this option, the courses in English and mathematics should be completed no later than the term indicated below:

Applicants for:	Term completed by:
Fall	Spring
Winter	Summer
Spring	Fall

- 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).

**Applicants planning to transfer fall 1998 and thereafter must also meet one of the following conditions:**

1. Students who were eligible for admission to the University when they graduated from high school—meaning they satisfied the Subject, Scholarship, and Examination Requirements—are eligible to transfer if they have a C (2.0) average in their transferable college course work.
2. Students who met the Scholarship Requirement but did not satisfy the Subject Requirement must take transferable college courses in the subjects they are missing, earn a grade of C or better in each of these required courses, and earn an overall C (2.0) average in all transferable college course work to be eligible to transfer. Students who met the Scholarship Requirement but did not meet the Examination Requirement must complete a minimum of 12 semester (18 quarter) units of transferable work and earn an overall C (2.0) average in all transferable college course work completed.
3. Students who were not eligible for admission to the University when they graduated from high school because they did not meet the Scholarship Requirement must:



- a. Complete 90 quarter units or 60 semester units of transferable college credit with a grade point average of at least 2.4, **and**
- b. Complete a course pattern requirement to include:
  - i. Two transferable college courses (3 semester or 4-5 quarter units each) in English composition; **and**
  - ii. One transferable college course (3 semester or 4-5 quarter units) in mathematical concepts and quantitative reasoning; **and**
  - iii. Four transferable college courses (3 semester or 4-5 quarter units each) chosen from at least two of the following subject areas: the arts and humanities, the social and behavioral sciences, the physical and biological sciences.

### 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 and Relations with Schools. 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.

A Duplicate Degree Fee is charged to all enrolled second baccalaureate students.

### 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; (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 SAT I (verbal and mathematical scores must be from the same sitting) or the American College Test (ACT) composite score, and three SAT II examinations which must include (a) writing, (b) math, level 1, 1C, or 2C, and (c) one from among English literature, language other than English, sciences, or social studies. (The SAT II examination in Literature may not be substituted for the Writing 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 1,400 (1,300 if taken prior to April 1995) on the SAT I or 31 on the ACT. The total score on the three SAT II examinations must be 1,850 or higher with a score of at least 530 on each test. (If the tests were taken prior to May 1995, the total score must be 1,730 or higher, with a minimum score of 500 on each test.)

### 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.

**Nonresident applicants transferring prior to fall 1998.** 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 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 statistics, for which advanced algebra is a prerequisite. The mathematics courses do not have to be transferable.

Beginning fall 1998 and thereafter, nonresident applicants must complete the 1998 transfer admission requirements found on pages 45–46 with a minimum transferable grade point average of 2.80.

### 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 and Relations with Schools only when requested. 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 6151, Princeton, N. J. 08541-6151, U.S.A.; telephone (609) 771-7100. Students must request the Educational Testing Service to forward results of their tests to the Office of Admissions and Relations with Schools. Completion of an *acceptable* English composition course (as determined by the Office of Admissions and Relations with Schools) with a grade of C or better will also clear the English proficiency requirement for international applicants.

Students who wish to improve their English proficiency to meet the TOEFL 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 6050, Irvine, CA 92716-6050. See Supplementary Educational Programs for additional information.

In addition to achieving a minimum TOEFL score of 550, all international students whose native language is other than English 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 their first year, with other major course work being adjusted accordingly.

Generally, financial assistance and scholarships from the University are not available to the nonimmigrant-visa student. International students must provide proof that sufficient funds will be available to meet their educational commitments while studying in

the United States. International undergraduate students are considered as nonresidents of California and are required to pay 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 and Relations with Schools.

## 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 SAT I is 430 or less (350 or less if taken prior to April 1995), or any such student without a verbal SAT I score, must, regardless of the student's TOEFL (Test of English as a Foreign Language) score or TSWE (Test of Standard Written English) 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 714-824-6206) and the Office of English as a Second Language (telephone 714-824-6781).

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 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 and listed in the School's section of this *Catalogue*, include classes in writing, speaking and listening, and reading and vocabulary development.

## 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. Some restrictions apply; additional information is available in the School of Humanities section.



## College Board Advanced Placement

Advanced Placement Examination	AP Score	Unit Credit	Credit Allowed Toward Degree
<b>Art</b>			
Art History	3, 4, or 5	8	Art History 40A, 40B, 40C. Satisfies categories IV and VII-B of the UCI breadth requirement.
Studio Art <sup>1</sup>			
Drawing	3, 4, or 5	8	Elective credit only.
General Portfolio	3, 4, or 5	8	Elective credit only.
<b>Biology</b>			
	3, 4, or 5 (Non-Biological Sciences Majors)	8	Biological Sciences 1A-B-C. Satisfies category II of the UCI breadth requirement.
	3 (Biological Sciences Majors)	8	Elective credit only.
	4 or 5	8	Biological Sciences 94 plus 5 units of elective credit.
<b>Chemistry</b>			
	3	8	Elective credit only.
	4 or 5	8	Chemistry 1A plus 4 units of elective credit. (Chemistry 1A/1LA plus 3 units of elective credit for School of Engineering majors.)
<b>Computer Science <sup>2</sup></b>			
A Exam	3	2	Elective credit only.
	4 or 5	2	Engineering E10, ECE11, or ICS 21.
AB Exam	3	4	ICS 21. <sup>3</sup>
	4	4	Engineering E10, ECE11, or ICS 21. <sup>3</sup> Satisfies category V of the UCI breadth requirement
	5	4	ICS 21, 22, and either 23 or 23E; or Engineering E10 or ECE11. Satisfies category V of the UCI breadth requirement.
<b>Economics</b>			
Macroeconomics	3	4	Elective credit only.
	4 or 5	4	Economics 20C.
Microeconomics	3	4	Elective credit only.
	4 or 5	4	Economics 20A-B.
<b>English <sup>2</sup></b>			
English Composition and Literature	3 (on either or both exams)	8	Elective credit only. Fulfills Subject A requirement.
English Language and Composition	4 or 5 (on either exam)	8	One course toward category IV of the UCI breadth requirement from the English 28 series plus 4 units of elective credit; may not replace English major or minor requirements.
	4 or 5 (on both exams)	8	Two courses toward category IV of the UCI breadth requirement from the English 28 series; may not replace English major or minor requirements.
<b>French</b>			
French Language	3	8	First-year language.
	4 or 5	8	Second-year language. Satisfies category VI of the UCI breadth requirement.
French Literature	3	8	First-year language.
	4 or 5	8	Second-year language. Satisfies category VI of the UCI breadth requirement.
<b>German Language</b>			
	3	8	First-year language.
	4 or 5	8	Second-year language. Satisfies category VI of the UCI breadth requirement.
<b>Government and Politics</b>			
American Government	3, 4, or 5	4	Elective credit only.
Comparative Government	3, 4, or 5	4	Elective credit only.
<b>History</b>			
European	3, 4, or 5 (on one exam)	8	Elective credit only.
United States	3, 4, or 5 (on both exams)	8	Elective credit only.
<b>Latin</b>			
Vergil	3 (on one exam)	4	Elective credit only.
Literature	3 (on both exams)	8	Latin 1A-B-C.
	4 or 5 (on one exam)	4	Latin 25.
	4 or 5 (on both exams)	8	Latin 25, 101, 102. Satisfies category VI of the UCI breadth requirement.
<b>Mathematics <sup>2</sup></b>			
AB Exam	3	4	Elective credit only.
	4 or 5	4	Mathematics 2A.
BC Exam	3	8	Mathematics 2A.
	4 or 5	8	Mathematics 2A-B.
<b>Music Theory</b>			
	3	8	Elective credit only.
	4 or 5	8	Music 5A-B-C and 30A-B-C.

Advanced Placement Examination	AP Score	Unit Credit	Credit Allowed Toward Degree
Physics <sup>2</sup>			
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.
Psychology	3, 4, or 5	4	Elective credit only.
Spanish			
Spanish Language	3	8	First-year language.
	4 or 5	8	Second-year language. Satisfies category VI of the UCI breadth requirement.
Spanish Literature	3	8	First-year language.
	4 or 5	8	Second-year language. Satisfies category VI of the UCI breadth requirement.

<sup>1</sup> Maximum credit 8 units.

<sup>2</sup> Maximum credit 4 units.

<sup>3</sup> 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 and subject 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, 40B, 40C 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.

## International Baccalaureate

The University grants eight quarter units (five and one-third semester units) of credit for each International Baccalaureate (IB) Higher Level examination on which a student scores 5 or higher. The University does not grant credit for subsidiary level examinations.

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

## 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 non-refundable 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 communicate directly with the Office of Admissions and Relations with Schools, University of California, Irvine, CA 92697-1075; telephone (714) 824-6703. Office hours are 8:00 a.m. to 5:00 p.m., Monday through Friday.

## 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. 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 I or ACT and three SAT II examinations) 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, 1997	File July 1–30, 1996
Spring quarter, 1997	File October 1–30, 1996
Fall quarter, 1997	File November 1–30, 1996
Winter quarter, 1998	File July 1–30, 1997
Spring quarter, 1998	File October 1–30, 1997

After the priority filing period has ended, campuses will accept applications only if they still have openings for new students.

Students are advised to check with the Admissions Office to find out if the campus is accepting applications for winter or spring terms.

## 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 and Relations with Schools 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 I or ACT tests and three SAT II examinations to the UCI Office of Admissions and Relations with Schools. *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 and Relations with Schools by July 15 for those students admitted for fall quarter. Those students entering in the winter or spring quarters must have their transcripts in the Office of Admissions and Relations with Schools within one month of the completion of the term of the school from 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.** *Transfer students should not send transcripts unless requested to do so.* It is essential that applicants accurately complete the self-reported college credit information in the application because it will be used for initial admission screening. *Once students are admitted and decide to enroll at UCI, an official transcript from each college attended and the high school from which they graduated must be sent to the Office of Admissions and Relations with Schools.* Unless a student is attending a summer session, final official transcripts should arrive in the UCI Office of Admissions and Relations with Schools by July 15 for those students admitted for the fall quarter. Summer-session transcripts must be submitted by September 15. Students entering UCI in the winter or spring quarters must have their final official transcripts sent to the Office of Admissions and Relations with Schools no later than one month after completion of the term of the school they are currently attending.

## EXAMINATION ARRANGEMENTS

Students should make arrangements to take the required tests with the Educational Testing Service, College Board/ATP, CN 6200, Princeton, NJ 08541-6200, for SAT I and SAT II examinations. For the ACT, students should write to the American College Testing Program Registration Unit, P.O. Box 168, Iowa City, IA 52243. (Test fees should be paid to the testing services, not to the University.) At the same time the test is taken, students should request that their scores be reported to the UCI Office of Admissions and Relations with Schools. To prevent confusion or unnecessary delay, it is important to use precisely the same form of the student's name on both the application for admission and the test materials.

In 1996-97 SAT I and SAT II are offered concurrently on the following Saturday mornings: October 12, 1996; December 7, 1996; January 25, 1997; March 25, 1997 (SAT I only); May 3, 1997; and June 7, 1997.

The 1996-97 ACT Tests are offered on the following dates: October 26, 1996; December 14, 1996; February 8, 1997; April 12, 1997; and June 14, 1997.

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

### Statement of Intention to Register

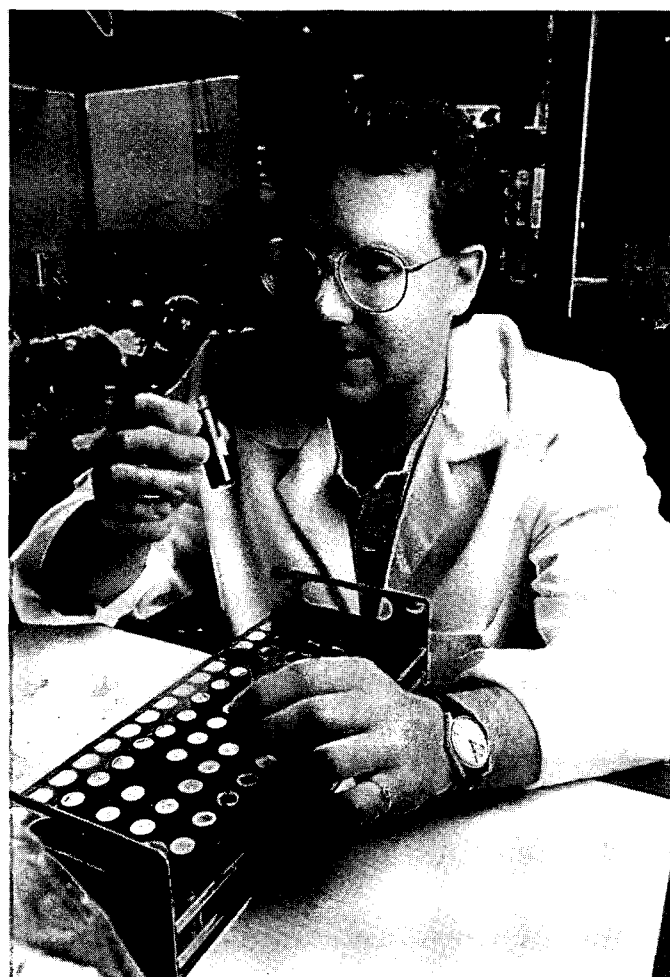
Students who are accepted for admission will receive, with their notification of admission, a Statement of Intention to Register (SIR) form. The SIR serves to notify each campus of the student's decision to accept or not accept its offer of admission. Before completing and returning the form, students 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 by the date indicated on the SIR.

Students entering in a winter or spring quarter must return the SIR by the date indicated on the SIR.

*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 Office of Admissions and Relations with Schools does not imply that eligibility for admission has been established.*



# INFORMATION FOR ADMITTED STUDENTS

## 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; Uni-Prep, a four-day program in August for new students only; and various one-day programs. All of these programs are sponsored by the Office of the Dean of Students, UCI Student Center; telephone (714) 824-7759.

**Welcome Week** features a variety of 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, and the program fee covers room, board, and program costs.

**Mini-SPOP** and **Transfer** orientation programs are intensive one-day events held in July and August for students and parents who are unable to attend the multi-day programs.

**Uni-Prep** is a four-day program for entering students held in August. 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 SPOP, Mini-SPOP, and Uni-Prep in mid-May.

## DIVISION OF UNDERGRADUATE EDUCATION

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

The following programs and services are administered by the Division of Undergraduate Education: (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 (undecided/undeclared majors), the Peer Academic Advising Program, and the Student-Recommended Faculty Program; (4) the Campuswide Honors Program which also administers the Scholarship Opportunities Program; (5) the

Committee for Instructional Development, which administers instructional improvement funds; (6) Instructional Development Services, which supports the improvement of teaching and innovation in learning within the UCI community; (7) Media Services, which supports campus academic programs by providing comprehensive services relating to instructional technology; (8) Resource Center for Undergraduate Education Grants, which assists faculty to obtain grants to enhance undergraduate education; and (9) the undergraduate Research Opportunities Program, which encourages and supports research and creative activity of UCI undergraduates in conjunction with faculty members.

## Placement Testing

UCI's Testing, Research, and Evaluation 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 selected or 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, Advanced Placement (AP) scores, and high school work, also may be used to determine course placement.

Placement examinations are given in the areas of chemistry, physics, precalculus, mathematical analysis, and English as a second language:

1. **Chemistry Placement Examination.** Students who plan to enroll in an introductory chemistry course (Chemistry 1P or 1A) are required to take this examination unless otherwise exempt.
2. **Physics Placement Examination.** Students who plan to enroll in Physics 5A are required to take this examination unless otherwise exempt.
3. **Precalculus Placement Examination.** Students who plan to enroll in Mathematics 2A are required to take this examination unless otherwise exempt.
4. **Mathematical Analysis Examination.** Students who plan to enroll in Mathematics 1A or 1B, or who have not had a prior course in precalculus and who plan to enroll in mathematics courses at UCI are strongly encouraged to take this examination.
5. **English as a Second Language (ESL) Placement Examination.** This examination is required of any student (a) whose native language is not English, (b) whose verbal score on the SAT I: Reasoning Test is 430 or less (350 or less for SAT tests taken prior to April 1995), (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) and the Test of Standard Written English (TSWE) 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.

All newly admitted freshmen 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 faculty advisor. Students enrolling for the first time in

fall quarter are strongly advised to take placement tests at the earliest possible date (usually in May) in order to allow time to receive their results and discuss them with an academic counselor during the summer registration period and prior to enrolling in courses. For the convenience of continuing students, placement tests also are administered every quarter during the academic year; consult the *Schedule of Classes* for dates.

Further information on placement testing and the testing schedule may be obtained by telephoning the Testing, Research, and Evaluation Office at (714) 824-6207 or on the World Wide Web at <http://www.ugs.uci.edu/~ugs/plt/>. The Office is part of the Program of Academic Support Services (PASS), a unit of the Division of Undergraduate Education.

## University Subject A Examination

The University of California system has established the University-wide 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 \$55 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 indicated "Undecided/Undeclared" as a major on their *UC Application for Admission* receive assistance from the General Studies Advising Program (GSAP) until they select an academic major. GSAP is located in 256 Administration Building; telephone (714) 824-6987.

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

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

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. 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. These procedures for new students and provisions for continuing students are explained in detail in the quarterly *Schedule of Classes*.

## Undecided/Undeclared Students

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

## 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 Division of Undergraduate Education, PASS programs and services are organized under three units: the Learning Skills Center, 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.

The primary responsibility of the **Testing, Research, and Evaluation Office** is to administer the placement testing program. The office also administers foreign language tests for exemption to the Language Other Than English breadth requirement, and is responsible for the campus-based administration of the Subject A examination. The research and evaluation component of the office provides evaluations of programs in PASS and in the Division of Undergraduate Education and conducts research on topics such as student retention, academic needs, course grades, and enrollment patterns. Additional information and testing schedules may be obtained on the World Wide Web at <http://www.ugs.uci.edu/~ugs/plt/>, and at <http://www.ugs.uci.edu/~ugs/flt/>.

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 College 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 course work, 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.

## Student Academic Advancement Services

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

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 Student Academic Advancement Services; telephone (714) 824-6234.

## Honors Opportunities

UCI offers challenging honors opportunities to its most motivated students, including a comprehensive Campuswide Honors Program which is open to outstanding students from all majors from the freshman through senior years, a variety of major-specific honors programs at the upper-division level, the Humanities Honors Program, and several Excellence in Research programs.

These programs offer some of the advantages usually associated with selective liberal arts colleges: rigorous, small, personalized classes and the intellectual exchange that creates a community of scholars. The difference, however, is that UCI's programs have the support and benefit of the 26-million-volume University of California Library system (of which UCI Library collections number some 1.5 million volumes) and of the numerous state-of-the-art laboratories on campus.

Honors students are encouraged to participate in the Education Abroad Program and/or the International Opportunities Program during their junior or senior year. See the Center for International Education section in this *Catalogue* for additional information.

### Campuswide Honors Program

The Campuswide Honors Program is available to selected high-achieving students in 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. In addition to a specific curriculum, other benefits include a variety of student/faculty social and cultural events, a weekly coffee hour, special study rooms, honors "academic theme" group houses on campus, and enhanced advising support.

Admission to the Campuswide Honors Program as an incoming freshman to UCI is by invitation only. All eligible candidates who meet minimum criteria are reviewed and selected by faculty representatives from each academic unit. Transfer and other students not admitted as incoming freshmen are eligible to apply for admission to the Program up until the first quarter of their junior year, if they have a minimum grade point average of 3.5. Application forms are available in 204 Engineering Tower.

Completion of the Campuswide Honors Program is noted on the student's transcript and baccalaureate diploma. Additional information is available from the Campuswide Honors Program; telephone (714) 824-5461; e-mail: [honors@uci.edu](mailto:honors@uci.edu).

### Major-Specific and Humanities Honors Programs

Honors programs for qualified junior- and senior-level students also are available to drama majors in the School of the Arts; to students from all schools regardless of their majors, by the School of Humanities; to Chemistry and Physics majors in the School of Physical Sciences; to Anthropology, Economics, Linguistics, Political Science, Psychology, Social Science, and Sociology majors in the School of Social Sciences; to Information and Computer Science majors; and to all majors in the School of Social Ecology. The focal point of each of these programs is the development of analytical and research skills through the pursuit of research under faculty supervision. An honors-level thesis is required in all the programs except Drama. Additional information is available in the specific academic unit sections of this *Catalogue*.

### Excellence in Research Programs

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

### Undergraduate Research Opportunities Program

The Undergraduate Research Opportunities Program (UROP) encourages and supports research and creative activities by UCI undergraduates, under the supervision of faculty members. Every school on campus offers a variety of programs and courses through which undergraduates may be involved in research. For those students and faculty who seek assistance from UROP, support can be provided in all phases of research activity: proposal writing, developing research plans, resource support, conducting research, analyzing data, and presenting results in oral and written form (such as senior theses presented at the annual Campuswide Undergraduate Research Symposium.) Projects supported by UROP may be done at any time during the academic year and/or summer, and may be conducted in any academic department or interdisciplinary program. The research must be worthy of academic credit and must emphasize interaction between the student and the faculty supervisor. UROP coordinates its undergraduate research activities with faculty in all departments, who provide suggestions about undergraduate research ideas and other faculty contacts. UROP also provides information about opportunities with government laboratories and industrial partners. Additional information is available from the Undergraduate Research Opportunities Program, 204 Engineering Tower; telephone (714) 824-4189; e-mail: [urop@uci.edu](mailto:urop@uci.edu).

### 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 as early as possible. Opportunities include undergraduate scholarships and research grants, as well as graduate fellowships. The Scholarship Opportunities program, offered through the Campuswide Honors Program, provides information, applications, and advice to qualified students; telephone (714) 824-5461.

### Honors Convocation

The UCI Honors Convocation ceremony is held each June for all students who graduate during that academic year with academic honors (*summa cum laude*, *magna cum laude*, or *cum laude*), receive special awards, and get inducted into honor societies. The criteria used by each school in selecting candidates for these honors are available at the counseling office of each school. One general criterion is that students must have completed at least 72 quarter units in residence at a University of California campus. Students who have on file recorded acts of academic dishonesty, as defined in *Policies Applying to Campus Activities, Organizations, and Students—Part A*, shall be excluded by the Associate Deans from consideration for academic honors at graduation. For further information contact the Division of Undergraduate Education at (714) 824-5428.

### 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 Division of Undergraduate Education, 256 Administration Building.

### Center for International Education

The Center for International Education (CIE) includes the Education Abroad Program (EAP) and International Opportunities Program (IOP). 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, research, and non-credentialed teaching, and prepares students for participation in these programs. 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.

Professional staff and international peer advisors, who have returned from an IOP or EAP experience, are available to guide students in making appropriate choices of international programs for their educational goals. All EAP and IOP participants are provided with pre-departure orientations, an EAP or IOP Student Guide handbook, and reentry orientations upon their return to UCI. The Global Issues and International Perspectives class, offered by the School of Social Sciences, introduces prospective EAP and IOP participants to intellectual and adjustment issues that they may face during an extended stay in a foreign country.

Students can keep up-to-date on CIE events, deadlines, and new international opportunities by subscribing to the biweekly electronic newsletter, *CIE-NEWS*. For information on how to subscribe, contact CIE.

CIE, EAP, and IOP are located in 1010 Student Services; telephone (714) 824-6343; e-mail: [cie@uci.edu](mailto:cie@uci.edu). Additional information is also available on the World Wide Web at <http://www.cie.uci.edu/~cie/cie.html>.

### 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 about 100 host universities and colleges in about 30 countries throughout the world. One quarter's participation in EAP fulfills the International/Global Issues breadth requirement (category VII-B). Participation in selected EAP programs also may satisfy the Language Other Than English breadth requirement (category VI); see the Requirements for a Bachelor's Degree section for a list of approved programs.

Admission of University of California undergraduate students to the Education Abroad programs is subject to the following qualifications: a minimum 3.0 cumulative grade point average at the time of application and maintained through departure; 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. Some programs require prior language study, while others either recommend it or do not require it.

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 substantially 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 often comparable to the cost of studying at UCI. EAP participants are responsible for the same fees as they pay at UCI, including 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 their round-trip transportation and orientation and intensive language program (depending on the Study Center). Most University of California financial aid, including grants, scholarships, and loans, is available to EAP students who qualify. EAP also offers several other scholarships including individual country incentive scholarships awarded to all students studying in these specific programs; EAP Opportunity Grants available to minority and economically disadvantaged students; and the EAP Alumni Scholarship. Contact CIE for additional information.

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. Some programs are also open to sophomores. In addition, students who have completed at least one full year of graduate study and who have support of their academic department and graduate dean may apply. Students interested in EAP should contact CIE early in the fall quarter to obtain an informative brochure, application forms, and information concerning application deadlines.

**Academic Program.** Generally, EAP students attend courses taught by faculty of the host university in the language of the host country. 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), and (2) a full year or, in some cases, a semester of academic courses. Students may go to Denmark, Egypt, Ghana, Hong Kong, Hungary, India, Indonesia, Israel, Korea, the Netherlands, Sweden, or Thailand, with no prior knowledge of these countries' languages. However, for countries where the language of instruction is not English, students must spend some or all of the summer in intensive language programs which prepare them in the language for the academic year.

University of California faculty who serve as directors and associate directors at most Study Centers provide academic counsel to students while abroad. Full credit is granted for courses satisfactorily completed, and approved courses are recorded on official UC transcripts. With careful planning, most EAP students make normal progress toward their UC degrees. Application of credits earned abroad toward major or graduation requirements is determined by the academic unit in which the participant's major is offered.

EAP participants who satisfy all degree requirements while abroad and who expect to graduate upon completion of their term abroad should file for candidacy to receive their degree one to two quarters after completion of EAP because, unfortunately, grades from abroad take time to reach the home campus. 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, as described in brochures for each country which are available at CIE.

**Australia.** 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 Queensland (Brisbane), University of Sydney, University of Western Australia, University of Wollongong

**Austria.** University of Vienna, Vienna University of Economics and Business Administration

**Barbados.** University of the West Indies (Cave Hill)

**Brazil.** Pontifical Catholic University (P.U.C.) of Rio de Janeiro

**Canada.** University of British Columbia (Vancouver)

**Chile.** University of Chile (Santiago), Pontifical Catholic University of Chile (Santiago)

**China.** Beijing Normal University, Peking University (Beijing), Tsinghua University

**Costa Rica.** University of Costa Rica (San José), Las Cruces Biological Station, Monteverde Institute

**Denmark.** University of Copenhagen

**Egypt.** The American University (Cairo)

**England.** University of Birmingham, University of East Anglia (Norwich), University of Essex, University of Exeter, University of Hull, University of Kent, University of Lancaster, University of Leeds, University of London (Queen Mary and Westfield College), University of Sheffield, University of Sussex (Brighton), University of Warwick, University of York

**France.** University of Bordeaux, Ecole Normale Supérieure (Paris), Ecole Normale Supérieure at Fontenay-Saint-Cloud (Paris), University of Grenoble, University of Lyon, Paris Center for Critical Studies, University of Toulouse

**Germany.** University of Bayreuth, Georg-August University (Göttingen)

**Ghana.** University of Ghana (Accra)

**Hong Kong.** Chinese University of Hong Kong, University of Science and Technology (Kumasi)

**Hungary.** Eötvös Loránd University

**India.** University of Delhi, Jawaharlal Nehru University (New Delhi)

**Indonesia.** Gadjah Mada University (Yogyakarta), Indonesian Arts Institute (Yogyakarta)

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

**Israel.** Ben-Gurion University of the Negev, Hebrew University (Jerusalem)

**Italy.** Bocconi University, University of Bologna, University of Padua, University of Venice, Scuola Normale Superiore (Pisa), Venice Institute of Architecture, Siena University for Foreigners

**Japan.** International Christian University (Tokyo), Sophia University (Tokyo), Doshisha University (Kyoto), Osaka University, Inter-University Center (Yokohama), Meiji Gakuin University (Yokohama), Tohoku University (Sendai), Tokyo Institute of Technology, Nagoya University, Tokyo University

**Korea.** Yonsei University (Seoul)

**Mexico.** Universidad Nacional Autónoma de México (UNAM), Mexico City and Taxco; San Nicolás de Hidalgo University of Michoacán (Morelia)

**Netherlands.** University of Amsterdam

**New Zealand.** Lincoln College (Christchurch), Massey University (Palmerston North), University of Auckland, University of Canterbury (Christchurch), University of Otago (Dunedin), University of Waikato (Hamilton), Victoria University (Wellington)

**Russia.** European University (Moscow)

**Scotland.** University of St. Andrews, University of Edinburgh, University of Glasgow, and University of Stirling

**Singapore.** National University of Singapore

**Spain.** University of Alcalá de Henares, University of Barcelona, Autonomous University of Barcelona, University of Granada, Autonomous University of Madrid, Complutense University of Madrid

**Sweden.** University of Lund

**Taiwan.** National Taiwan University

**Thailand.** Chiang Mai University, Chulalongkorn University (Bangkok)

## INTERNATIONAL OPPORTUNITIES PROGRAM

UCI's International Opportunities Program (IOP) is the link between UCI students and any international educational experience that occurs outside the boundaries of the U.S. and is not a part of UCI's Education Abroad Program (EAP).

IOP staff provide information and counseling to assist students in finding an appropriate program to meet their needs and interests. Students may choose from academic study (with transferable credit), paid work, paid or unpaid internships, unpaid or compensated volunteer service, field research, and paid teaching opportunities in nearly every country in the world. This includes all academic programs sponsored by U.S. institutions that occur on foreign soil or water (as in the case of the Semester at Sea program), direct enrollment at foreign institutions, summer session abroad programs through UCI and other UC campuses, and UCI Independent Study (199) done in foreign countries under the supervision of a UCI faculty member.

With careful planning IOP students participating in study programs may be able to make progress toward their UCI degree by fulfilling major, minor, or breadth requirements.

IOP participants who have had their study program (and transferable credit) preapproved through completion of the International Study Advance Contract are eligible to apply for UCI financial aid. Many scholarships are also available. Any UCI student (undergraduate, graduating senior, or graduate) in good academic standing, regardless of major, class level, or foreign language ability, may participate in IOP.

To acquaint students with opportunities abroad, IOP sponsors the yearly "Go Abroad Fair" and periodic presentations, orientations, and workshops. It also maintains a library of international resources and publications listing opportunities abroad.

## 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 Office for Disability Services; telephone (714) 824-7494 (voice), 824-6272 (TDD). Staff can assist students from the time they are admitted to UCI until they graduate.

### Catalogue Rights

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

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

Students transferring from other collegiate institutions may elect to meet as graduation requirements either: (a) those in effect at the time of enrollment at UCI; (b) those subsequently established; or (c) those in effect at UCI when the student first entered a previous, accredited collegiate institution, provided that the student has been

continuously enrolled in a collegiate institution and that entry was not more than four years prior to the time of enrollment at UCI.

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

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

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 education requirements of that college, upon approval of petition; (b) students who transfer from another UC campus and have met the general education requirements of that campus (may be completed at UCI if in progress at the time of transfer); or (c) transfer students who have completed 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 3, 4, or 5 in either of the two College Board Advanced Placement Examinations in English; *or*
2. Achieving a score of 660 or better on the SAT II Writing Test (600 if taken prior to May 1995); *or*
3. Achieving a score of 5 or above on the International Baccalaureate's Higher Level English A Examination; *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; *or*
5. Achieving a score of 8 or higher on the University of California writing proficiency examination (Subject A Examination); *or*
6. Completing the California State University English Equivalency Test with "Pass for two full courses of College English Credit" (this test was discontinued in 1993).

**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 WR 37, WR 39A, 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, 1996 (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) 824-6717.

- 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.)
- Taking English and Comparative Literature WR 37 or WR 39A and receiving a letter grade of at least a C in that course.

The Pass/Not Pass grade option may not be used to satisfy the Subject A requirement.

Students enrolled at UCI may take only UCI courses in satisfaction of the Subject A requirement. Continuing UCI students may not take summer courses at another institution to satisfy the Subject A requirement.

## AMERICAN HISTORY AND INSTITUTIONS

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

- 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.
- Achieving a score of 3, 4, or 5 on the College Board Advanced Placement Examination in United States History.
- Achieving a score of 550 or better on the SAT II: American History and Social Studies test (500 or better on tests taken prior to May 1995).
- Presentation of a certificate of completion of the requirement at another California institution.
- 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.
- 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

Among the many possible purposes for breadth requirements, the one that stands out at UCI is that of introducing students to the basic modes of thought that characterize academic disciplines. In order to know ourselves and the world, we need to know first the ways these can and have been known. Thus the breadth requirement at UCI requires students to devote a substantial amount of their course work, especially in their first years, to connected series of courses which provide a coherent experience within such areas as the natural and social sciences, humanistic inquiry and the arts, and the nature of symbolic systems.

Several other aims that UCI regards as especially desirable are consistent with this chief purpose and are embodied in varying degrees in the UCI breadth requirement: to cultivate a historical consciousness of society and culture; to acquaint students with fundamental ways of thinking different from their own or that of their gender, class, and culture with a view to expanding their sense of human possibilities and awakening an awareness of the conditioned nature of their own assumptions about the world; to equip students with a broad understanding of the contemporary world and its cultural, political, scientific, and technological problems; to equip students with the skills essential to understanding and grappling with these problems; to establish bridges and to understand relationships between academic disciplines; and to provide students with some intellectual experiences which virtually all can be assumed to have had in common and thus to introduce them to what, after all, a university has traditionally been supposed first and foremost to be, an intellectual community.

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

- I. Writing
- II. Natural Sciences
- III. Social and Behavioral Sciences
- IV. Humanistic Inquiry
- V. Mathematics and Symbolic Systems
- VI. Language Other Than English
- VII. Multicultural Studies and International/Global Issues

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 categories I and VII, 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, V, or VI.

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 "category 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 "category 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 90 quarter units (achievement of junior status) and completion of the lower-division requirement.

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

**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 WR 39B (Expository Writing) and WR 39C (Argument and Research).
2. English and Comparative Literature WR 37 (Intensive Writing) and WR 39C (Argument and Research). Recommended students only.
3. Two quarters of the writing component of the Humanities Core Course (Humanities 1A-B-C) beyond satisfaction of the 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 letter grade of C or better will satisfy the Subject A requirement. (The Pass/Not Pass grade option may not be

used to satisfy Subject A.) 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 letter grade of C or better. The lower-division writing requirement will be satisfied in the second and third quarters of the Humanities Core Course for these students.

4. Students who complete English and Comparative Literature WR 37 or WR 39B with a grade of B (3.0) or better may substitute as the second course of the lower-division Writing Requirement one of the following courses in creative writing or nonfiction and journalism: English and Comparative Literature WR 30, WR 31, WR 32, or WR 38.

**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 examination 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:** Biological Sciences 1A-B and either 1C or 1D

**Chemistry:** Chemistry 1A-B-C and 1LB-LC or 1LA-LB; H2A-B-C and 1LB-LC

**Earth System Science:** Any three courses from Earth System Science 10, 20E, 20F, Physics 20A, 20B, 20C, 20D

**Interdisciplinary:** Biological Sciences H90A-B-C or Chemistry H90A-B-C or Mathematics H90A-B-C or Physics H90A-B-C

**Physics:** Physics 3A-B-C and 3LB-LC; 5A-B-C and 5LB-LC; H6A-B-C and 5LB-LC; three courses from Physics 20A, 20B, 20C, 20D, Earth System Science 10, 20E, 20F; Physics 17A-B plus one course from Physics 16, 20A, 20B, 20C, 20D

**Social Ecology:** Environmental Analysis and Design E1, E3, E5



**III. Social and Behavioral Sciences.** Students must complete a three-course combination, as follows: (1) an introductory course followed by two additional courses in the same area, *or* (2) an introductory course followed by a second course in the same area plus an introductory course in another area.

Introductory courses are indicated by an asterisk (\*).

**EXCEPTION:** Although Psychology 11E is not introductory, it may be taken without completion of an approved introductory course.

**Anthropology:** Anthropology 2A\*, 2B\*, 2C\*, 2D\*

**Comparative Culture:** Social Sciences 70A\*, 70B\*, 70C\*

**Economics:** Economics 1\*, 20A\*-B\*-C\*

**Geography:** Social Sciences 5A\*, 5B\*, 5C\*, 18A, 18D

**Linguistics:** Linguistics 3\*, 10, 20, 51, 68, 80 (NOTE: Linguistics 3, 10, 20 may be counted toward either category III or V but not both.)

**Political Science:** Political Science 6A\*, 6B\*, 6C\*, 21A, 31A, 41A, 51A

**Psychology:**

Psychology 7A\*, 9A\*-B-C, 11E, 21A, 46A, 55A, 56L, 78A

Psychology and Social Behavior P9\*

Sociology 31

**Social Ecology:**

Criminology, Law and Society J4\*, J7\*, J40

Environmental Analysis and Design E8\*

Social Ecology 10\*, H20A\*-B\*-C\*

**Social Sciences:** Social Sciences 1A\*, H1E\*-F\*-G\*, 2A\*

**Sociology:** Sociology 1\*, 2\*, 3\*, 23, 24, 31, 62

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

**Arts:**

Arts 1A, 1B, 1C

Dance 90A-B-C; 91A-B-C

Drama 40A, 40B, 40C

Music 4A-B-C; 14A-B-C; 40B-C-D

Studio Art 1A-B-C; 10A-B-C

**Humanities:**

Art History 10A-B-C; 40A, 40B, 40C; 42A, 42B, 42C

Classics 35A, 35B, 35C

East Asian Languages and Literatures 55 (three different topics)

German 50 (three different topics)

History 21A, 21B, 21C; 35A, 35B, 35C; 40A, 40B, 40C;

41A, 41B, 41C; 42A, 42B, 42C; 43A, 43B, 43C;

50 (three different topics)

Humanities 1A-B-C; 5A, 5B, 5C; 51A, 51B, 51C

Philosophy 1, 4, and either 5 or 9; 1, 6, 7; 10, 12, and either 11 or 13

History 60, Philosophy 40, and any one of the following: Philos-

ophy 140, History 135A, 135B, 135C, 135D, 135E, 135F

Russian 50 (three different topics)

**Literature:**

Classics 50A, 50B, 50C

English and Comparative Literature CL 50A, 50B, 50C;

three courses from E 6, E 7, E 8, CL 8;

E 28A or E 28D, E 28B, E 28C or E 28E

**Women's Studies:**

Women's Studies 50A, 50B, 50C

**V. Mathematics and Symbolic Systems.** Students must select one of the following three-course combinations:

Anthropology 10A-B-C

Economics 10A-B-C

Information and Computer Science 1A or 21, plus two courses from 1B, 1C, 1D, 1E, 1F, 22, 23;

three courses from 1B, 1C, 1D, 1E, 1F

Linguistics 3, 10, 20 (NOTE: Linguistics 3, 10, 20 may be counted toward either category V or III but not both.)

Mathematics 2A-B and either 2C, 7, or 13; 6A, 6B, 6C

Philosophy 29, 30A, and either 30B or 31

Psychology 10A-B-C

Social Ecology 166A-B-C

Social Sciences 10A-B-C; 100A-B-C

Sociology 10A-B-C

**VI. Language Other Than English.** Students must demonstrate competency in a language other than English by completing one of the following options:

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

Chinese 2A

East Asian Languages and Literatures 2A

French 2A, S2AB

German 2A

Greek 25

Italian 2A

Japanese 2A, S2AB

Latin 25

Russian 2A

Spanish 2A, S2AB, 5

For information on UCI's prerequisites and course placement policies, consult the School of Humanities, Foreign Language Placement section in this *Catalogue*.

B. Credit for four years of high school study or its equivalent in a single language other than English with a C average or better in the fourth year.

C. A score of 4 or 5 on a College Board Advanced Placement Examination in a language other than English.

D. A score of 620 or better on a College Board SAT II examination in a language other than English, with the exception of SAT II: Modern Hebrew for which a score of 540 or better is required. (A score of 600 or better is required for all tests taken prior to May 1995.)

E. Completion of an approved course of study in one of the following Education Abroad Programs (EAP): Austria, Brazil, Chile, China, Costa Rica, Denmark, France, Germany, Hong Kong, Hungary, Indonesia, Israel, Italy, Japan, Korea, Mexico, Russia, Spain, Sweden, Taiwan, Thailand. (Consult the Center for International Education for other EAP courses of study which also may fulfill this requirement).

F. The equivalent as determined by an appropriate and available means of evaluation. For information on availability of such examinations and testing schedules, consult the Testing, Research, and Evaluation Office, Student Services II, (714) 824-6207. If an appropriate means of evaluating competence in a non-English language of instruction does not exist, satisfactory completion, with a C average or better, of two years of formal schooling at the sixth grade level or higher in an institution where the language of instruction is not English will meet the requirement. Appropriate documentation must be presented to substantiate that the course work was completed.

**VII. Multicultural Studies and International/Global Issues.**

Students must select one course in multicultural studies and one course on international/global issues 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 Studies (VII-A):*

Anthropology 85A, 125X, 136K, 138R, 161T  
 Classics 175  
 Education 124, 171  
 English and Comparative Literature CL 9, CL 105, E 105  
 Environmental Analysis and Design E15, E102  
 History 15A, 15B, 15C, 146A, 146B, 146C, 148A, 148B, 150, 151A, 151B, 152  
 Humanities 1C, 51A, 51B, 51C, 60A, 60B, 60C  
 Music 78A, 78B  
 Philosophy 131E  
 Psychology 174A, 174B, 174E  
 Spanish 100E, 110C, 140A, 140B, 142, 143  
 Social Sciences 70A, 70B, 70C, 70T, 78A, 78B, 78C, 170B, 170C, 170E, 170F, 171F, 172B, 172C, 172D, 172E, 173F, 173G, 173H, 173I, 173K-L, 175A, 175B, 178B, 178C, 178D, 178E  
 Sociology 63, 65, 161  
 Women's Studies 50A, 50B, 50C, 51, 150, 160, 161, 162, 163, 170CE, 170CF, 170SA, 170SB, 170SG, 171A, 171B, 171C, 173B, 180D, 180L, 181A, 183C, 197

*International/Global Issues (VII-B):*

Anthropology 2A, 60A, 121A, 121D, 121H, 125A, 125B, 125P-Q, 126N, 135A, 135H, 138O, 138P, 138Q, 160M, 162A, 163A, 163G, 163H, 163K, 164K, 164L, 174A  
 Art History 40A, 40B, 40C, 42A, 42B, 42C  
 Chinese 3A-B-C, 100A-B-C, 101A-B-C, 115, 180  
 Classics 176  
 Dance 90A-B-C, 91A-B-C  
 Drama 40A, 40B, 40C  
 East Asian Languages and Literatures 3A-B-C, 55, 110, 117, 120, 130, 150, 155, 160, 180, 190  
 Economics 148D, 152A, 152P-Q  
 English and Comparative Literature CL 40A, CL 40B, CL 40C  
 Environmental Analysis and Design E116, E143U  
 Film Studies 160  
 French 101A-B-C, 110, 115, 116, 117, 118, 119, 120, 125, 127, 139, 150, 160  
 German 50, 100A-B-C, 101, 102A, 102B, 117, 118, 119, 120, 150, 160  
 History 11, 21A, 21B, 21C, 41A, 41B, 41C, 42A, 42B, 42C, 43A, 43B, 43C, 50, 101, 110A, 110B, 110C, 112C, 112D, 114, 116A, 116B, 117A, 117B, 118A, 118B, 118C, 120A, 120B, 120C, 120D, 122A, 122B, 122C, 124A, 124B, 126A, 126B, 126C, 127A, 127B, 127C, 128, 130A, 130B, 158A, 158B, 158C, 161A, 161B, 161C, 169, 170A, 170B, 170C, 171A, 171B, 171C, 172, 173, 174, 175, 177, 178  
 Humanities 5A, 5B, 30  
 Italian 100A-B, 101A, 101B, 101C, 160  
 Japanese 3A-B-C, 100A-B, 101A-B-C, 115, 180  
 Linguistics 1  
 Philosophy 117A  
 Political Science 6A, 41A, 42A, 146A, 147A, 151A, 151B, 151C, 151D, 151F, 152B, 152C, 152D, 152F, 154B, 154C  
 Portuguese 140A  
 Russian 50, 100A-B-C, 101A-B-C, 150, 151, 152

Spanish 10A-B, 44, 100A, 100B, 100C, 100D, 110A, 110B, 116, 121, 130A, 130B, 130C, 131A, 131B, 131C, 150, 160, 185  
 Social Sciences 172F, 176A  
 Sociology 44, 77, 165A, 175A, 175B, 177A  
 Women's Studies 170EC, 170EJ, 170FA, 170FB, 170FC, 170GA, 170GB, 170GC, 170GD, 170GH, 170GJ, 170SD, 170SE, 170SF, 171F, 180A, 180B, 180E, 180F

**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. Transfer students should read the section on Information for Transfer Students: Fulfilling Requirements for a Bachelor's Degree.

Students should note that with the exception of courses designated Pass/Not Pass Only, courses taken Pass/Not Pass may *not* be used to satisfy specific course requirements of the student's school and major, unless authorized by the appropriate dean. Additional information on grading is located in the Academic Regulations and Procedures section.

**Minor Programs**

For certification in a minor, a student must obtain a minimum overall grade point average of at least C (2.0) in all courses required for the minor program. No more than two courses applied to a minor may be taken Pass/Not Pass. Completion of the minor is noted on a student's transcript.

Students are *not* required to minor in a program in order to graduate from UCI.

**Application for Graduation**

In order to receive a degree, an undergraduate student 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. Students should contact their academic counselors for deadline dates.

## INFORMATION FOR TRANSFER STUDENTS: FULFILLING REQUIREMENTS FOR A BACHELOR'S DEGREE

This section provides a guide for transfer students in understanding how their course work from another collegiate institution applies to fulfilling UCI degree requirements. Transfer students should use this information in conjunction with the previous section, Requirements for a Bachelor's Degree. Transfer students are required to meet university, breadth, school, department, and major requirements described in the *Catalogue*. The courses and descriptions in this *Catalogue* may be used by prospective transfer students as a guide for selecting courses of similar content and purpose in their own institutions. No student who has taken a course which is accepted for credit by the Office of Admissions and Relations with Schools and which has been mutually determined with a community college 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 Office of Admissions and Relations with Schools about courses that may be used to satisfy UCI requirements.

### Transfer Students: Completion of the UCI Breadth Requirement

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 57, or (c) the Intersegmental General Education Transfer Curriculum.

With the exception of students who complete 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.

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

**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 semesters or three quarters of 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, linguistics, 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 two semesters or three quarters of approved courses in *one* of the following areas: classics, history, philosophy, humanities, English literature, comparative literature, women's studies, dramatic literature, or the history of art, dance, or music. Performance courses may *not* be used in satisfaction of this requirement.

**V. Mathematics and Symbolic Systems.** This requirement is met by taking two semesters or three quarters of approved courses in mathematics, computer science, linguistics, or logic.

**VI. Language Other Than English.** This requirement is met by (a) completing the third semester or fourth quarter of approved college-level study in a language other than English; (b) credit for four years of high school study, or its equivalent, in a single language other than English with a C average or better in the fourth year; (c) a score of 4 or 5 on a College Board Advanced Placement Examination in a language other than English; (d) a score of 620 or better on a SAT II examination in a language other than English, with the exception of SAT II: Modern Hebrew for which a score of 540 or better is required (a score of 600 or better is required for all tests taken prior to May 1995); (e) completion of an approved course of study in an Education Abroad Program; or (f) the equivalent as determined by an appropriate and available means of evaluation. If an appropriate means of evaluating competence in a non-English language of instruction does not exist, satisfactory completion, with a C average or better, of two years of formal schooling at the sixth grade level or higher in an institution where the language of instruction is not English will meet the requirement. Appropriate documentation must be presented to substantiate that the course work was completed.

### VII. Multicultural Studies and International/Global Issues.

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.

### INTERSEGMENTAL GENERAL EDUCATION TRANSFER CURRICULUM

California community college transfer students may fulfill the UCI breadth requirement by completing the Intersegmental General Education Transfer Curriculum (IGETC). The IGETC consists 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 IGETC does not satisfy the UCI upper-division writing requirement. Students who do not complete the IGETC prior to transferring to UCI must fulfill the UCI breadth requirement in its entirety.

Courses used to fulfill the IGETC must be completed with a grade of C or better. (Courses may also be taken on a Pass/No Pass basis provided Pass is equal to a letter grade of C or better.)

Lists of specific approved courses which may be taken in fulfillment of the IGETC are available from California community colleges.

### **Intersegmental General Education Transfer Curriculum**

1. **Language Other Than English:** Proficiency equivalent to two years of high school study in the same language.
2. **English Communication:** One course in English Composition and a second course in Critical Thinking-English Composition.
3. **Mathematical Concepts and 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.

### **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.)

#### **Community Colleges**

A student may earn a maximum of 105 quarter units (70 semester units) at a community college toward a University degree. No further unit credit may be transferred from a community college, although subject, major, or breadth credit for courses taken will still be granted.

Students anticipating transfer to UCI are urged to consult with their community college counselors. The counselors, with the aid of that college's UC transfer course list, can advise students about California community college courses and units which will transfer to the University. In addition, staff in the UCI Office of Admissions and Relations with Schools 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 and Relations with Schools. Decisions regarding the applicability of such courses toward specific degrees and majors rest with the student's academic dean.

### **COURSE CREDIT FOR WORK TAKEN ELSEWHERE**

The policies above refer only to the unit transferability of courses and are uniformly implemented on all 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.

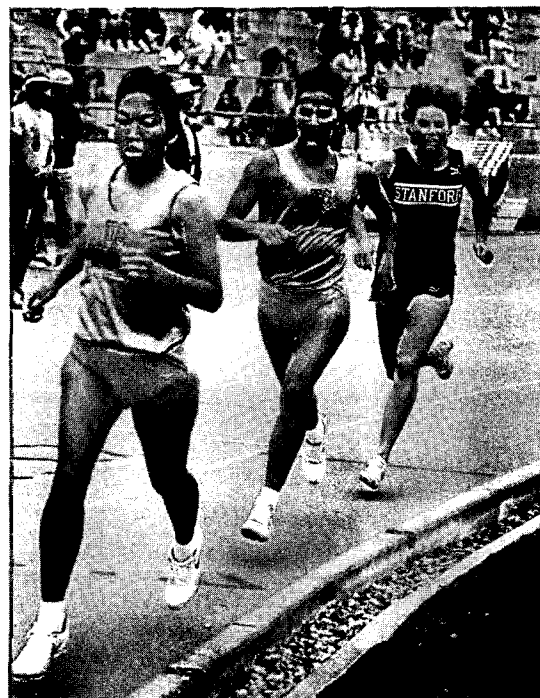
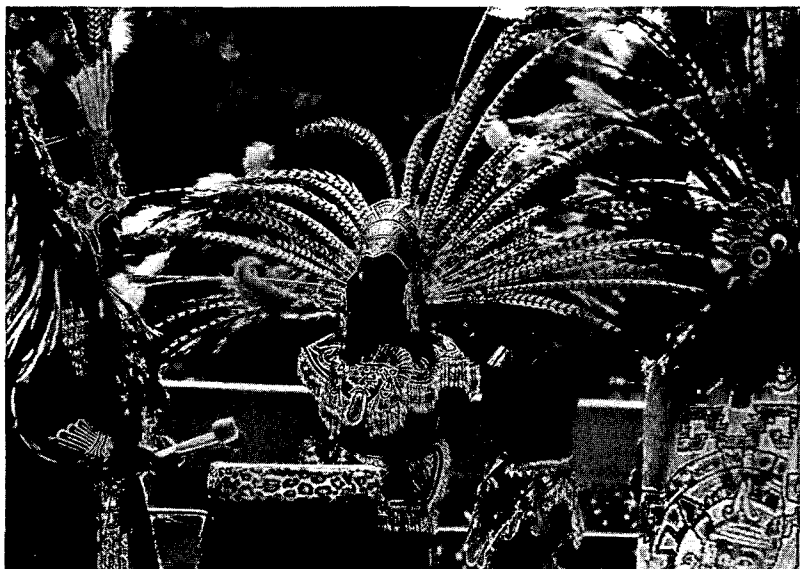
The Irvine campus makes every effort to eliminate all barriers to orderly progress from California community colleges into UCI's programs. To this end, courses from many California community colleges have been reviewed by UCI faculty and approved as acceptable toward meeting lower-division major or breadth 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 California community colleges have entered into articulation agreements with UCI so that the specific application of their courses to UCI's breadth, 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 major requirements as possible prior to transferring to UCI.

Students are urged to consult community college counselors or the Office of Admissions and Relations with Schools for information on planning a program for transfer. Prospective transfer students with specific questions about course work in their major should contact the respective school or department at UCI.



*A selection of campus events includes sports club exhibitions, multicultural celebrations, intercollegiate athletic competitions, career fairs, and student club and organization information sessions.*



## 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 are correct.**

A quarterly calendar of dates for enrollment and payment of fees is included in each quarterly *Schedule of Classes*. The *Schedule of Classes* booklet is distributed to continuing students during the seventh week of each quarter for the ensuing quarter and also may be purchased at the UCI Bookstore. New students receive the booklet by mail.

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 registration period.
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.

### TELEPHONE REGISTRATION

TELE, UCI's telephone registration system, allows students to enroll in classes from anywhere in the world. Students may add and drop classes, inquire about open sections, change their grading option or units for a variable-unit class, and list their confirmed class schedule. Immediate feedback on the availability of a class and a student's eligibility to enroll is provided; schedule changes may be made during the registration period or the adjustment period. Complete information about TELE is available in each quarterly *Schedule of Classes*.

### PAYMENT OF FEES AND ENROLLMENT

Registration fees are assessed quarterly and appear on the ZOT-Bills mailed to students by the Campus Billing Services Office. Students who do not pay all required fees to the Cashier's Office during the published registration period are subject to a late service fee. This fee is graduated: \$25 through the end of the second week of classes; \$50 thereafter.

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

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 registration 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 registration 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.

Late registration (payment of fees and/or enrollment in classes) is permitted only in exceptional circumstances with the authorization of the student's dean. A student who is allowed to apply late and, as a result, must pay fees and enroll late, is required to pay late service fees. Late services charges may be waived *only* if the University is responsible for the late transaction.

### 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. These cards must be processed in person at the Registrar's Office. During the first two weeks of instruction, some professors permit add/drop transactions using TELE. There is a \$3 service charge for all add, drop, or change transactions *received* at the Registrar's Office after the second week of classes.

An undergraduate student may not enroll in more than 20 units or fewer than 12 units of course work during a given quarter without the permission of the student's academic dean or, for undecided/undeclared students, the Dean of the Division of Undergraduate Education. Changes to Pass/Not Pass grading must not cause the student to exceed the limitations to Pass/Not Pass enrollment.

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 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 Status

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. To take advantage of reduced fees for part-time status, quarterly course enrollment is limited to 10 units or less for undergraduate students and to eight units or less for graduate students. Students enrolled in excess units after the Friday of the third week of instruction are liable for full fees.

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

In addition to all other required fees, students approved for part-time status pay one-half of the Educational Fee and one-half of the Nonresident Tuition Fee, Professional School Student Fee, or Duplicate Degree Fee (if applicable). 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.

Additional information is available in the quarterly *Schedule of Classes*.

## 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.

## 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).

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

The Registrar's Office provides verifications of student status. Needs for which such verifications are performed include reference checks, bank loans, applications for good-student-driver insurance rates, and Social Security payments. There is a \$3 fee for each verification, however verifications for the purpose of student loan deferments are free of charge. For verification purposes, enrollment in 12 units or more in regular sessions is considered to be full-time status; enrollment in 6.0-11.9 units is considered to be half-time status; enrollment in 5.9 units or less is considered to be less than 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 to the Registrar's Office after obtaining the signatures of their academic dean (or the Dean of the Division of Undergraduate Education, for undecided/undeclared students) and the University Ombudsman, for undergraduate students. 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 Grad-ing 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.

New undergraduate students are encouraged to seek advice from their admissions or academic counselor to understand the consequences of withdrawal and their eligibility to return. If an undergraduate student plans to leave the University after completing all academic work for the latest quarter of enrollment and has not paid fees for the next quarter, a formal notice of withdrawal is not necessary.

## Readmission: Undergraduate Students

Students are strongly urged to consider the readmission policy in formulating plans for leaving or returning to UCI. Every effort will be made to readmit UCI students who were in good academic standing at the time they ceased attending and who have filed readmission applications by the deadline. Former UCI students who wish to be readmitted should contact the undergraduate counseling office of the school or program which offers their intended major.

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).

New undergraduate students who cancel registration prior to the first day of the quarter must reapply to UCI; they are not eligible to file for readmission as described above.

If a student has been academically disqualified from the University or has left the University while on probation or subject to disqualification, the student must apply for readmission. The application, however, is subject to the approval of the dean of the school which the student hopes to enter.

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

Detailed information about California residence is available in the *Catalogue's* Expenses and Fees section. 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 92697-4975, telephone (714) 824-6129, or the Office of the Legal Analyst—Residence Matters, 300 Lakeside Drive, 7th Floor, University of California, Oakland, CA 94612-3565.

## 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 the spring and also is available from the academic counselors. Additional information is available from the Commencement Office; telephone (714) 824-6378.

**Application for Graduation.** In order to receive a degree, an undergraduate student must 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 the application are established quarterly so that candidates' academic records can be reviewed to verify that all graduation requirements have been met. Students should contact their academic counselor for deadline information.

**Diplomas.** Students are advised by mail when their diplomas are available, which is three to 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.

## 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).

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

### GRADING SYSTEM

- A — Excellent (4.0 grade points per unit)
- B — Good (3.0 grade points per unit)
- C — Average (2.0 grade points per unit)
- D — Lowest passing grade (1.0 grade point per unit)
- F — Not passing (no grade points)
- I — Incomplete
- P — Pass (equal to grade C or better)
- NP— Not Pass (equal to grade C- or below)
- S — Satisfactory (equal to grade B or better; graduate students only in courses designated by the Graduate Council)
- U — Unsatisfactory (graduate students only in courses so designated by the Graduate Council)
- IP— In Progress (restricted to certain sequential courses, so designated by the Committee on Courses or Graduate Council, for which the final quarter grade of a multi-quarter 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 non-repeatable 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 of the school. If the matter is not resolved, the student may go for counsel to the Office of the University Ombudsman. Under circumstances explained in the 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.

Some courses are designated by academic units as Pass/Not Pass Only. Students do not have the option of taking these courses for a letter grade.

### The use of Pass/Not Pass is governed by all of the following provisions:

1. A student in good standing may take up to an average of four units per quarter on a Pass/Not Pass basis.
2. In addition, students may count a total of 12 units of courses designated Pass/Not Pass Only toward their graduation requirements.
3. A student who earns a grade of C (2.0) or better will have a Pass/Not Pass grade recorded as Pass. If the student earns a grade of C- or below, the grade will be recorded as a Not Pass, and no unit credit will be received for the course. In both cases, the student's grade will not be computed into the grade point average.
4. Courses taken under the Pass/Not Pass option may count toward the unit requirement for the bachelor's degree and toward the 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.

5. 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.
6. A student on academic probation may not enroll in a course with the Pass/Not Pass option unless the course is offered on that basis only.

## SATISFACTORY/UNSATISFACTORY GRADES (GRADUATE STUDENTS ONLY)

Satisfactory/Unsatisfactory grading, unlike Pass/Not Pass, is not a student option. With the consent of the academic units involved, 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. 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 or Graduate Council for use of this notation. IP notations are not included in computations of the student's grade point average and do not contribute to the number of quarter units completed.

## GRADES NOT REPORTED

A 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

With approval from their school or program, 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.

Information regarding the repetition of foreign language courses is available in the School of Humanities section.

### SATISFACTION OF THE WRITING REQUIREMENT

Students enrolled at UCI may take only UCI courses in satisfaction of the lower-division and upper-division writing requirements. Continuing UCI students may not take summer courses at another institution to satisfy lower-division or upper-division writing requirements. The two courses taken to fulfill the lower-division Writing requirement must be completed with a grade of C or better.

1. Students who fail to attain a letter grade of C or better in English and Comparative Literature WR37 must repeat the course or enroll in the equivalent. It is recommended that these students enroll in WR39A followed by WR39B-C to assure completion of this requirement. Students who fail to attain a grade of C or better in WR39C must repeat the course.
2. Students who fail to attain a grade of C or better in one or both courses of the English and Comparative Literature WR39B-C sequence must repeat the course or courses in question.
3. Students who fail to attain a grade of C or better in at least two quarters of the writing component of the Humanities Core Course after satisfying the 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 (or a Pass or Credit grade equivalent to C). See the UCI Requirements section 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	—	44.9
Sophomore	45.0	—	89.9
Junior	90.0	—	134.9
Senior	135 +		

### COURSE LOAD LIMITS

An undergraduate may enroll in as few as 12 units or as many as 20 units. To enroll for more than 20 units or fewer than 12 units, students must obtain the authorization of their dean or, for undecided/undeclared students, the Dean of the Division of Undergraduate Education. 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 or, for undecided/undeclared students, by the Faculty Board for Unaffiliated Students 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 or, for undecided/undeclared students, by the Faculty Board for Unaffiliated Students 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 two 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. (Additional information is available in the *Financial Aid at UCI* handbook.)

Probation is not a necessary step before disqualification. If a student becomes subject to disqualification, the complete record of grades and other accomplishments will be carefully reviewed by the responsible faculty authorities of the student's school or, for undecided/undeclared students, by the Faculty Board for Unaffiliated Students. If the record indicates little probability that the student will be able to meet the academic standards of the University of California, the student will be disqualified from further enrollment. Each school and department 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 honors opportunities at UCI is found in the Planning an Undergraduate Program section and the academic unit sections.

### Quarterly Undergraduate Honors

Quarterly undergraduate honors are awarded in each school to students who achieve a quarterly grade point average of 3.5 or better in a minimum of 12 graded units.

### Honors at Graduation

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. Additional information is available in the Division of Undergraduate Education section of this *Catalogue*.





## 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). Fee information is available from the University Extension Registration Office.

## Credits From Other Institutions or University Extension: Undergraduate Students

UCI undergraduate students who plan 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 first consult with and secure prior approval from the academic dean or chair of their major who will determine if the credits are applicable to major and breadth requirements.

UCI undergraduate students *must* submit an official transcript of all course work earned at another institution or college to the Office of Admissions and Relations with Schools. If such courses are determined by the Office of Admissions and Relations with Schools to be transferable, do not duplicate other credit granted, and do not exceed limitations of credit, then the units earned may be applied toward the total required for graduation.

## 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 submit a formal petition, including an original transcript, 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.

## SUPPLEMENTARY EDUCATIONAL PROGRAMS

### Summer Session and University Extension

Philip Nowlen, Assistant Executive Vice Chancellor for Continuing Education and Director of Summer Session

#### SUMMER SESSION

Several summer sessions are held on the Irvine campus. Session I is scheduled from June 23 through July 30, 1997. Session II is from August 4 through September 10, 1997. An overlapping 10-week session extends from June 23 through August 29, 1997. 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, high school graduates, community members, and qualified high school students who have completed their junior year. Admission to summer session does not constitute admission to a regular session of the University; therefore, official transcripts of educational records are not required. 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) 824-5493. 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 the community. Extension provides advanced learning opportunities through more than 1,800 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 advancement. Extension offers over 40 certificate programs in fields as diverse as the arts and design, corporate business and management, education, health and social sciences, information systems and engineering, science and technology, and legal programs. For a complete listing of certificate programs, call the UCI Extension Registration Office at (714) 824-5414.

Most of these courses are held in the evenings and on weekends to accommodate the working professional. They are conducted at UCI, at UCI Extension's Anaheim classroom site, and at other sites throughout Orange County. For those who wish to participate in innovative and exciting daytime programs, UCI Extension's Mini Term program offers shorter, more interactive courses on general interest topics. Mini Term courses range from day-long seminars to six-week courses in such areas as culinary arts, foreign languages for business and travel, history, literature, philosophy, and writing. In addition, University Extension also develops custom education and training programs to meet the specialized, in-house training needs of business and government. A broad spectrum of subjects and topics are offered. Free evaluations of training needs are available from the customized training specialist at (714) 824-3051.

University Extension provides a means by which members of the general public may take regular UCI courses without formal admission to the University. The Access UCI Program (also known as concurrent enrollment) is available on a space-available basis with the approval of the course instructor. Access UCI fee information and applications are available from 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 and men who are in need of educational and vocational guidance. The UCI Pre-College program and other youth programs provide stimulating, exciting instruction and early exposure to the University for youth of varying ages.

A free catalogue may be obtained from the University Extension Registration Office, telephone (714) 824-5414.

### **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 test preparation, American history, business and computer English also are available.

UCI Extension also offers certificate programs for international students and professionals in an accelerated full-time format. Accelerated certificate programs provide a fast-paced educational environment to give individuals immediate practical knowledge and increase their career potential.

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) 824-5991.

An ESL program is offered by the School of Humanities to students who have been admitted to UCI. Refer to the section on Admission of International Students.

## **ROTC**

Although actual ROTC courses are not taught on the UCI campus, a cross-town agreement allows qualified UCI students to participate in the Air Force Reserve Officers Training Corps (AFROTC) or the Army Reserve Officer Training Corps (AROTC). A brief descriptive pamphlet summarizing the programs is available from the Office of Admissions and Relations with Schools, 204 Administration Building.

### **AIR FORCE ROTC**

Through arrangements with 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 UCI 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- and three-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 \$150 per month.

More information is available from the Department of Aerospace Studies, Loyola Marymount University, 7107 80th Street, Los Angeles, CA 90045-2699; telephone (310) 338-2770.

### **ARMY ROTC**

Through arrangements with the Department of Military Science at the University of Southern California 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). Two-, three-, and four-year competitive scholarships which provide tuition and fee payments at UCI, payment for books, and a stipend of \$150 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, University of Southern California, University Park, Los Angeles, CA 90089-0653; telephone (213) 740-4026.

## **MAJOR CAMPUS PUBLICATIONS**

In addition to the *UCI General Catalogue*, 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. In addition, a wide variety of online information is available on the UCI gopher server and on the World Wide Web at <http://www.uci.edu/>.

### **SCHEDULE OF CLASSES**

The *Schedule of Classes* contains current information on fees, how to enroll in classes, final examination schedules, and registration dates for each quarter. 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 cancelled classes; changes in time, instructor, or classroom assignments; and other information. The Registrar's Office also provides online information on the World Wide Web at <http://www.reg.uci.edu/>.

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.

The *Schedule of Classes* is available just prior to the beginning of each quarter's registration period (four weeks before the end of each quarter). The *Schedule* is distributed to new and continuing students and also may be purchased from the UCI Bookstore.

## DEPARTMENTAL AND SCHOOL ANNOUNCEMENTS

Publications by schools and academic departments contain a wide assortment of academic information of immediate, timely interest to students. The publications come in various forms, from brochures of several pages to one-sheet photocopied announcements, and 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, 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 *The Rice Paper*, *Umoja*, *La Voz Mestiza*, *The Womyn's Quarterly*, *Faultline*, *Grand Larceny*, and *The Chimpanzee*. In addition, UCI students operate a radio station, KUCI (88.9 FM).

## UCI JOURNAL

The *UCI Journal* is published twice yearly by University Advancement for campus and community members, donors, and alumni. The *Journal* contains feature stories on UCI research, programs, and people; information on gifts, grants, students, and campus events; and commentaries on current issues. The *Journal* has a circulation of about 50,000, and also is available on the World Wide Web at <http://www.communications.uci.edu/~inform/>.

## UCI NEWS

*UCI News* is a twice-monthly newspaper for UCI faculty and staff, featuring information on campus research, programs, events, and people, plus a calendar of upcoming events. *UCI News* is available on campus newsstands, via e-mail, on the UCI gopher under Newsstand/UCI News, and on the World Wide Web at <http://www.communications.uci.edu/~inform/>.

## 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 describing student services such as career planning, health care, housing, and counseling; and *CR*, the Campus Recreation quarterly announcement.

## LIFE ON CAMPUS

### UCI Bookstore

The **UCI Bookstore**, located in the UCI Student Center, stocks all required and recommended course books for classes taught at UCI. In addition, the Bookstore features an extensive selection of general and technical books, periodicals, classical music on compact disc and cassette, school supplies, UCI clothing and insignia items, and gifts and greeting cards.

Hours of operation are 8 a.m. to 6 p.m., Monday through Friday, and 10 a.m. to 4 p.m. on Saturday. The Bookstore telephone number is (714) 824-BOOK; electronic inquiries and orders may be sent to [books@uci.edu](mailto:books@uci.edu).

The **UCI Computer Store**, 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. The UCI Computer Store 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) 824-4266.

**Cyberspace** is a computing resource center operated by the UCI Computer Store in the UCI Student Center. It gives UCI students and staff access to Macintosh computers and low-cost, high-quality printing services. Come and visit, or call (714) 824-7096. Hours are 9 a.m. to 6 p.m., Monday through Friday.

The **UCI Professional Bookstore**, located across Campus Drive from UCI in the Irvine Marketplace, provides the University community with course books required for University extension classes and the College of Medicine, medical reference books, medical instruments, supplies, and gifts. Hours are 10 a.m. to 7 p.m., Monday through Thursday; 10 a.m. to 6 p.m., Friday and Saturday. Telephone (714) 854-7365 for more information.

**Zot n Go** convenience stores are in three locations on campus: the UCI Student Center, BC's Cavern on the Green, and Middle Earth. They stock snacks, beverages, school supplies, and test forms and also offer film processing.

### Bren Events Center

The Bren Events Center is the largest public assembly 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) 824-5050. The Events Center Ticket Office, which handles ticket sales for most campus events, is open from 10 a.m. to 5 p.m., Monday through Friday; telephone (714) 824-5000.

### Career and Life Planning Center

The Career and Life Planning Center is responsible for assisting UCI students in career planning and decision making through workshops, individual counseling, part-time and summer employ-



*Campus Village, an apartment complex located on the western side of UCI, is home to 800 undergraduate students. Village features include a community center, a computer laboratory, and recreation facilities.*

ment 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 (primarily during the summer) 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 five 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 \$50 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, culturally diverse and disadvantaged students, and returning students. Additional information is available from the Center; telephone (714) 824-6881.

## 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) 824-2100.

University Montessori School of Irvine is the sixth child care center serving UCI students, faculty, and staff. The School serves 200 children ages three months through first grade. Enrollment is on a first-come, first-served basis. Additional information is available from the School; telephone (714) 854-6030.

## 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) 824-6457.

## Office of the Dean of Students

The staff of the Office of the Dean of Students is dedicated to assuring that the diversity of student services and programs offered complement and enrich the educational and out-of-class life of UCI students. This goal is achieved through the provision of a comprehensive range of cultural, social, and intellectual opportunities which promote student learning and development. Services are

available through the central office located in the UCI Student Center or through several resource centers elsewhere on campus.

## CENTRAL OFFICES

The central office of the Dean of Students houses a number of services for students and is the headquarters for campus clubs and organizations, sororities and fraternities, community service programs, and leadership programs, as well as new student programs and services, and student discipline.

**Clubs and organizations** number more than 275 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. "Club Net," a self-guided computerized database, provides students with detailed information on the various clubs at UCI as well as programs and activities sponsored by the Office of the Dean of Students. The "Club Net" kiosk is located in the Office Lounge.

UCI's Greek community includes 29 **sororities and fraternities** with more than 1,400 members. The Office of the Dean of Students 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, Greek Service Day, and Greek Awards Night. Most of UCI's fraternities and sororities maintain houses on the campus.

The Office also serves as the "home base" for the **UCI Human Service Corps**, a confederation of campus service clubs and organizations. These groups sponsor community service programs and involvement opportunities for UCI students interested in assisting individuals and community agencies with a variety of social service needs.

To aid students in becoming more effective leaders, the Office of the Dean of Students offers a variety of **leadership programs and services**. These include the All-University Leadership Conference, a weekend program for emerging and established student leaders; credit leadership courses designed to strengthen students' leadership skills and exposures; informal "how to" workshops addressing such topics as communication skills, time management, goal setting, and team building; and various publications and resources intended to assist students in their leadership roles.

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 is earned through participation in a weekly seminar. Additional information is available from the Office of the Dean of Students in the UCI Student Center; telephone (714) 824-5033.

**New Student Programs** staff provides assistance and information to students who are in the process of being admitted to UCI. It also coordinates a variety of orientation programs, including the Student-Parent Orientation Program (SPOP), a live-in experience on campus for new students and their parents; Uni-Prep, a four-day, intensive program in September to help new students develop increased social and intellectual skills; winter and spring orientation for new students; and Welcome Week, held in the fall. New Student Programs is located in the UCI Student Center as part of the Office of the Dean of Students; telephone (714) 824-7760.

Staff in the Office of the Dean of Students also handles **student discipline and individual grievances**. More information is provided in the *Student Handbook and Policies Applying to Campus Activities, Organizations, and Students, Part A*, which is available from the Office of the Dean of Students, located in the UCI Student Center; telephone (714) 824-5590.

A variety of other programs including the Welcome Week Fair, Presidents' Dinner, College Bowl Tournament, and Student Organization Recognition Night are coordinated through the Office. Additional information about any of these programs is available from the Office; telephone (714) 824-5181.

## RESOURCE CENTERS

The Office of the Dean of Students provides support for a number of campus resource centers, including the Cross-Cultural Center; Disability Services; International Center; Lesbian, Gay, and Bisexual Resource Center; and the Center for Women and Gender Education.

The **Cross-Cultural Center** offers a friendly atmosphere and supportive environment for UCI's diverse student body. It provides meeting space and serves as "home base" for nearly 50 registered multicultural organizations. Center facilities include a conference room for group meetings, a lounge for socializing, a study room, and a computer work station. The annual Rainbow Festival, a three-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 African Consciousness Quarter, Asian/Pacific American Heritage Month, Cinco de Mayo, and American Indian Culture and Education Days. 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 UCI's ethnic and culturally diverse students. Additional information is available at the Center; telephone (714) 824-7215.

**Disability Services** offers disabled students opportunities to participate in the academic community at UCI. Students with varying disabilities including those who use wheelchairs, semi-ambulatory, blind or visually impaired, deaf or hard of hearing, learning disabled, or who have chronic health problems may be eligible for reasonable disability accommodations through this program. Staff assist students from the point of their admission to UCI through graduation. Specialized services may include reader services, testing accommodations, priority registration, individual tutors, document conversion, campus orientation, special equipment, and information regarding disability legal rights in the university setting. Also considered are provision of notetakers and interpreters, liaison with faculty and campus departments, on-campus transportation, and special parking. A Disabilities and Computing Lab in the office provides special computer technology and training. In addition, special on-campus transportation is provided for students with mobility impairments and temporary disabilities. There is no cost to the student for the support services or accommodations provided by Disability Services. Students are responsible for fully acquainting themselves with the detailed procedures for use of accommodations. These written procedures are available at Disability Services.

Students with disabilities may qualify for reasonable accommodations based on disability-related needs. Students must provide appropriate documentation about their disability to Disability Services. Documentation provided to Disability Services is confidential. It is the responsibility of the applicant or students to provide this documentation and, if necessary, to cover the cost for such documentation. This includes the cost for professional assessments for such disabilities as learning disabilities, attention deficit disorder, and psychiatric disabilities. The applicant or student should contact Disability Services for more information about disability

documentation requirements. In some cases there is need for recent or very detailed documentation about the disability. UCI reserves the right to determine the most effective and timely accommodations after consultation with the student about the disability and previous use of accommodations. The provision or use of a disability accommodation does not guarantee or ensure a certain level of achievement for the student. Students with disabilities must meet the same academic standards as nondisabled students. Some academic accommodations may require approval of the chair or dean 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 Office for Disability Services 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) 824-7494 (voice), 824-6272 (TDD).

The **International Center** 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 center is located in Student Services I; telephone (714) 824-7249.

The International Center also provides services for veterans. The **Veterans Program** emphasizes support services for veteran students and eligible dependents of veterans. Assistance includes benefit certification, work-study, and orientation and outreach programs. The Office is located in Student Services I; telephone (714) 824-6477.

The **Lesbian, Gay, and Bisexual Resource Center**, located in Gateway Commons, provides support services and programs for the campus LGB community, as well as education and outreach services and programs for the entire UCI community. In addition, the center serves as a source of information and assistance for UCI's neighboring communities and as a model program for other colleges and universities.

The **Center for Women and Gender Education** offers programs concerning gender issues for women and men, as well as services designed to meet the special needs and interests of women. Programs include workshops on a wide range of topics including male-female communication, rape prevention, sexual harassment, and cultural influences on gender roles. Services include a library, women's self-defense training, notification for student parents in case of children's medical emergencies, peer and professional counseling, Campus Assault Prevention Program, and referral to services in the community. The Center is on the ground floor of Gateway Commons across from the Main Library; telephone (714) 824-6000.

## 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 Alcohol and Drug Education.

Health Education provides students with a variety of involvement opportunities as peer educators and leaders via the Peer Health Education Program, the UCI Speakers Bureau, and the 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 the UCI Student Center; telephone (714) 824-5806. Hours are 9 a.m. to 5 p.m., Monday through Friday.

## Housing

### OFF-CAMPUS HOUSING

The Housing Office provides information and services to help new and returning 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 renting rooms in houses, budgeting expenses, roommate selection, becoming involved in UCI activities, and tenant/landlord rights and obligations.

Representative monthly rental prices for apartments (both furnished and unfurnished) in the local area in fall 1995 were \$635 for a studio/bachelor or one-bedroom apartment, \$972 for a two-bedroom, one-bath, and \$1,490 for a three-bedroom unit. A student's individual rent costs will be determined by the number of people sharing the unit.

Advisors are available to answer questions and provide additional information related to off-campus living. The Housing Office is located in 209 Administration Building and is open from 8 a.m. to 5 p.m. weekdays; telephone (714) 824-7247.

### 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 1996-97, the 19-meal-per-week plan provides three meals a day, Monday through Friday, and brunch and dinner on weekends for \$604.50 per quarter. A second plan offers any 14 meals a week for \$565.50 a quarter; 10 meals a week for \$546 a quarter; and five meals for \$26.50 a week or \$318 per quarter.

Also available for students who do not live in the residence halls are Meal Punch Cards. In 1996-97, punch cards are available at \$2.45 per punch, discounted to \$2.35 per punch when more than 50 punches are purchased. Breakfast costs one punch, lunch two punches, and dinner three punches.

Meal contracts and punch cards may be purchased from UCI Residential Dining located on the lower level of the Bucklebury Library Building in Middle Earth; telephone (714) 824-4182.

### ON-CAMPUS HOUSING

Housing Administrative Services coordinates application procedures and contracts with campus residents. Approximately 32 percent of UCI's student body is housed on campus. A booklet describing housing options is mailed to all undergraduate applicants who are offered admission to UCI and to all transfer applicants; it also is available from the Housing Office; telephone (714) 824-6811.

### Undergraduate Housing

**Mesa Court** and **Middle Earth**, UCI's residence halls, house 2,441 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 most of the residence halls. Every room has carpeting and window coverings, and is furnished with a bed, desk, chair, 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). A registered dietician is available to assist students with their individual dietary needs. The halls are closed during the winter 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. Weekend field trips and retreats, designed to amplify on-campus experiences, are often part of the interest hall program.

Charges for the 1996-97 academic year (late September through mid-June) are \$6,211-6,301 for a single room and \$5,566-5,653 for a double room; rates included a \$21 annual community association fee. An increase in cost is anticipated for the 1997-98 academic year. The cost of room and board in the residence halls is paid in monthly or 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 1996-97 academic year, including utilities, are \$2,467 per student for an unfurnished apartment and \$2,763 per student for a furnished apartment. An increase in rates for 1997-98 is anticipated.

**Arroyo Vista Housing** is a new and exciting undergraduate community of 35 houses arranged in neighborhoods. The houses accommodate 16, 24, or 32 students, making the total population of the village approximately 800. Two students share a furnished room, and all occupants can enjoy the spacious living room with fireplace and the fully equipped kitchen.

More than half of the houses are designated Academic Theme Houses. These houses are sponsored by academic programs and offer an educational component to enhance the academic experience, as well as the living experience, of their residents. The Academic Theme House rate for the 1996-97 academic year is \$2,763 for a double occupancy room. An increase in cost is anticipated for the 1997-98 academic year. A meal plan is not provided in the contract, but may be purchased separately.

The remaining houses are leased to fraternity and sorority chapter organizations. Students interested in living in these houses should consult individual Greek chapters for more information.

### Undergraduate and Graduate Housing

An unusual housing option at UCI is the 79-space recreational vehicle park, Irvine Meadows West, which provides housing for graduate and undergraduate students. The rate for 1996-97 is \$112 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 six-month 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.

**Palo Verde** apartments, UCI's newest graduate housing complex, consists of three- and four-story buildings in a setting of landscaped courtyards and pathways. This 203-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 with a bed, desk, bookshelf, and wardrobe closet. 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 brochure and application are mailed to all admitted freshmen and all transfer applicants to the University. Students who do not receive application materials should telephone the Housing Office at (714) 824-7247. Graduate applicants may receive a housing application by checking the appropriate box on the Application for Graduate Admission. A \$20 nonrefundable application fee must accompany the housing application.

On-campus housing in the fall is guaranteed for all new undergraduate students under the age of 25 who apply for campus housing before May 1, 1997. However, to maintain one's housing status, new students must submit their Statement of Intent to Register (SIR) to the Office of Admissions and Relations with Schools by May 1, 1997 (advanced standing students must submit their SIR by June 1, 1997). Applications received after May 1, 1997, will be handled in the order received.

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. Interested applicants are urged to apply as early as possible as there is a waiting list of at least one year for these facilities. For additional information, telephone (714) 824-7247.

### UCI Student Center

The UCI Student Center is the destination for anyone at UCI who is looking for a place to study, relax, shop, be entertained, or pick up a bite to eat. Major services include the UCI Bookstore, the UCI Computer Store, UCI Cycle and Skate, UCI Clone Factory, a florist, and a travel agency. Study and lounge space can be found throughout the building, ranging from a quiet study lounge to lounges for recreation, music listening, and television viewing. The Center also houses offices for student organizations, government associations, and activities, and the UCI Film Society and Entertainment Registry, as well as a number of eating establishments including the Cornerstone Cafe, the Food Court, Carl's Jr., and the Anthill Pub & Grille. For additional information and hours of operation, telephone (714) 824-2419.

## 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; and the **ASUCI Express Shuttle**, which operates three bus lines to transport students back and forth between the campus, Irvine, Newport Beach, and Balboa Island. In addition, it oversees the **UCI Photo I.D.** program which provides each student with official identification and **UCItems Unlimited**, the campus specialty store, and it publishes the **UCI Yearbook** and the new-student publication, *Who's New Freshman Experience*.

ASUCI also sponsors major concerts frequently and popular films and videos which are shown free three 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 a Reggae Festival and the Wayzgoose Festival 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. The Executive Vice President chairs Legislative Council meetings, serves on the Student Fee Advisory Committee, and supervises the management of all ASUCI elections. The Academic Affairs Vice President appoints student representatives to Academic Senate committees and 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 Affairs Vice President appoints and monitors more than 60 student representatives to UCI administrative 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 Legislative 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) 824-5547.

### ASSOCIATED GRADUATE STUDENTS

All graduate and professional school 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 functions as a liaison between graduate students and the UCI administration, faculty, and staff by addressing concerns and working to resolve grievances.

#### Services

AGS provides graduate students with numerous student-operated services. It publishes the *Grad Scope* to inform graduate students of relevant issues on campus and elsewhere and sponsors social and cultural events of benefit to the graduate community.

AGS sets aside funds each year to be used specifically for graduate student development, academic unit services, and special projects. These funds are allocated on a rolling basis to petitioning clubs and organizations on campus.

AGS, in partnership with the UCI Student Center, also operates the Anthill Pub & Grille in the UCI Student Center. The Pub offers food, international beers, and live entertainment at student-friendly prices, in an atmosphere geared toward creating a more cohesive graduate student population.

#### Organization

AGS is governed by a council of members elected from each academic unit conducting a graduate program and each professional school; 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.

#### Involvement

Occasional vacancies on the Council do occur over the course of a school year, and interested students are encouraged to apply for such vacant seats. The AGS Council also 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 UC Student Association and other campus student organizations to advocate policies supportive of students and crucial to the social needs of the community at large. For additional information, telephone AGS, (714) 824-6351, or come to their offices in D-200, UCI Student Center.

### 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, represents the medical student body in all matters relating to the UCI campus, the University's Office of the President, and the community.

Medical students are members of AGS and 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.

### GRADUATE SCHOOL OF MANAGEMENT STUDENT ASSOCIATION

The Graduate School of Management Student Association (GMSA) is governed by an elected student council composed of one representative from each class section, 10 club presidents, and

an executive committee. The executive committee is comprised of a student body president, vice president internal affairs, vice president external affairs, vice president finance, and vice president communications. The GSMSA Council, along with the AGS Council, represents the graduate Management student body in all matters relating to the UCI campus, the University's Office of the President, and the community.

Graduate Management students are members of AGS and have access to all services funded by AGS. In addition to these services, the GSMSA Council uses a portion of the student association fee to provide funding for Management student activities that benefit the Graduate School of Management community.

## Student Health Service

All fully registered students and students approved for participation in part-time study programs are eligible for Student Health services. 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, nurse practitioners, physician assistants, and nursing staff. The clinic also includes an x-ray and clinical laboratory and a pharmacy. General medical clinics are held 7 a.m. to 5 p.m. every day during the week and are available by appointment or on an urgent care basis. 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, urology, and ear, nose, and throat.

Fully registered students who have a medical history and physical examination on file at Student Health may see the practitioner or clinician at no cost for the professional component of the visit (existing insurance will be billed). If the student is uninsured, there may be an out-of-pocket expense for the professional component of certain clinics. Payment arrangements are available. Coverage begins the first day of Welcome Week in the fall and continues through the last day of finals week in June. Those who do not have a physical examination and medical history on file pay a fee to see the medical professional. All students pay for their laboratory, pharmacy, and x-ray charges, whether or not they have a physical on file; those with medical insurance may then bill their insurance plans for reimbursement. 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 the College of Medicine Admissions Office. International students' packets are mailed by the Office of International Services with their initial registration packet.

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) 824-7093.

**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 completed at the Student Health Center for a fee. For an appointment telephone (714) 824-5304. 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. Students who do not comply with the physical examination requirement must pay a fee for the services provided by the Student Health Service.

Student Health provides as many services as possible at no charge; however, some services are available only on a fee-for-service basis. These include immunizations; prescriptions from the Student Health Pharmacy; cosmetic dermatology; minor surgery including dental services; 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 to those students with a physical and history on file. This is a fee-for-service clinic. The cost varies based on the level of professional services provided. 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) 824-5304.

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 Department of Education include training for Peer Health Education, 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 Health Education Office at (714) 824-5806.

## INTERCOLLEGIATE ATHLETICS AND CAMPUS RECREATION

### Intercollegiate Athletics

UCI's Intercollegiate Athletic Program features 19 sports, with 10 men's teams, eight women's teams, and one coed sailing team. Men's sports include basketball, crew, cross country, golf, soccer, swimming and diving, 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 12-school Big West Conference. UCI also competes in the Mountain Pacific Sports Federation in men's soccer, men's volleyball, and water polo. UCI's sailing team competes in the Intercollegiate Yacht Racing Association (ICYRA), and crew competes in the Pacific Coast Championships. The UCI women's teams also are members of NCAA Division I and the Big West Conference, competing in basketball, crew, cross country, soccer, swimming and diving, tennis, track and field, and volleyball.

UCI has captured 21 national team championships in eight different sports since opening in 1965, with 63 individuals winning national titles and well over 400 earning All-American honors. UCI has won 40 Big West conference championships since 1977: 19 in cross country, 11 in tennis, eight 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 3.0 GPA over

the previous three quarters. In the last 13 years, 1,151 UCI student-athletes have earned the award.

**TEAM UCI** features Anteater student-athletes, coaches, and staff members participating in community outreach activities, such as visiting local elementary and middle schools to provide motivational talks.

*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 23 outstanding UCI men and women who have participated in Olympic competition, including the 1992 silver medalist in the long jump, Mike Powell. UCI has had four former-student-athletes on each of the last three U.S. Olympic water polo teams. Currently there are approximately a dozen former Anteater athletes competing professionally throughout the world.

The Intercollegiate Athletic offices are located in Crawford Hall; telephone (714) 824-6931.

## Campus Recreation

The Campus Recreation program offers noncredit instruction, intramural activities, club sports, fitness, and informal recreation opportunities to all officially enrolled students, as well as faculty and staff.

Recreational instruction provides UCI students, faculty, and staff with an opportunity to enhance their campus experience by developing and maintaining a physically active lifestyle through participation in noncredit classes. Martial arts classes represent many parts of the world with offerings in the well known arts of Karate, Judo, and Tai Chi, to the more exotic forms of Iaido, Wushu, and Kali Eskrima. Opportunities in fitness range from basic step aerobics, jogging, weight training, and party dancing, to cardio jam/hip hop, yoga, and aqua fitness. Sports activities vary from the classic "lifetime" sports such as tennis, golf, volleyball, and softball to specialty sports like rock climbing, roller hockey, ice skating, and fencing. Classes are taught by members of UCI's Division I coaching staff along with expert specialty instructors.

Intramural activities feature men's, women's, and co-rec team sports, and many special events and tournaments. Team sports include flag football, volleyball, basketball, softball, soccer, ultimate frisbee, and team tennis. A sampling of special events and tournaments include: badminton, racquetball, tennis, track and field, three-on-three basketball, two-person volleyball, swimming, and wrestling. The emphasis is on participation, and activities are offered at all ability levels from novice to advanced.

Intramural teams are formed by students each quarter. A "free agent" option is available for students wishing assistance identifying teams who need additional players. Students may come by the Campus Recreation Office on the first day of classes each quarter to reserve their space in an intramural league.

Sailing instruction is offered at the Intercollegiate Sailing Base located on Newport Harbor, six miles from campus. Classes are offered from beginning to advanced levels on UCI's fleet of 14' Lido's and 30' Shields. Weekend and weekday classes are offered all year long. When not used for instruction, the boats may be checked out by students and other members of the UCI community. This program is offered to those who complete a basic proficiency test and pay a nominal fee. The UCI Sailing Club also sponsors a variety of activities including races and cruises.

The Masters Swim Program provides structured, coached workouts for students, faculty, and staff. This program is designed for all age and ability levels. Morning and evening workouts are scheduled.

For students interested in competing in sports not offered through Intercollegiate Athletics, club sports are available. Club Sports are student run and University facilitated. Some clubs are organized for competition against other universities' clubs, while others are oriented toward mutual interest and instruction. Active clubs include: badminton, bike racing, fencing, men's lacrosse, women's lacrosse, roller hockey, rugby, scuba diving, ski racing, triathlon, wrestling, and women's water polo. Experience is not a prerequisite for membership in any club sport. New clubs can be formed by any student in a sport not currently offered.

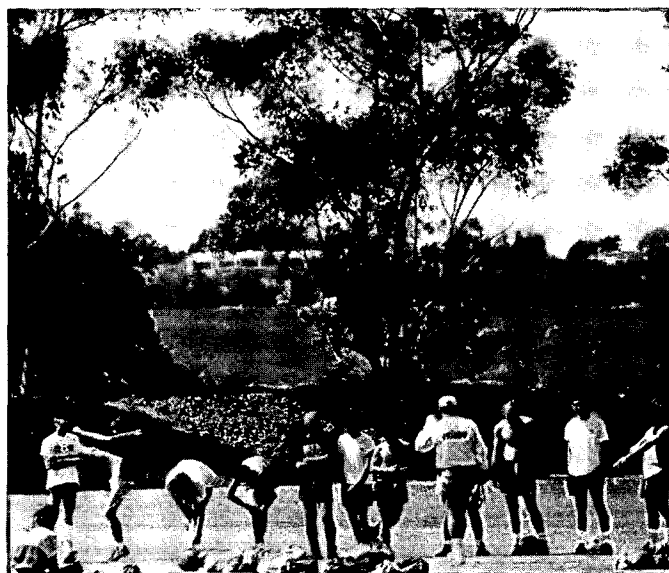
Informal recreation is facility time made available to serve the diverse needs of the UCI community on a drop-in basis. The facilities in and around Crawford Hall are the primary location for these opportunities. Activities include: badminton, indoor and outdoor basketball, jogging, racquetball, swimming, tennis, volleyball, and weight lifting. All UCI students and Recreation Card holders can participate in informal recreation activities. Hours are listed in the quarterly *Recreation Release*. Gym activity times are also updated monthly in the *Monthly Gym Schedule*. Reservations may be made for racquetball courts 24 hours in advance. Special reservation requests can be made for other facilities on a limited basis. Equipment such as basketballs, volleyballs, racquets, and other items may be checked out on a daily basis in the Sports Equipment Service Center; telephone 824-6401 for information regarding facility hours or equipment rental.

Additional information is available from the Campus Recreation Office, 1368 Crawford Hall, telephone (714) 824-5346, or on the World Wide Web at <http://www.campusrec.uci.edu/~cr/index.html>.

## 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. Anteater Field, a lighted stadium that seats 1,000, is home to the UCI soccer teams. The track stadium seats 2,500 and the tennis stadium, which seats 500, features 12 courts, six of which are lighted. The campus also has lighted outdoor basketball courts; six indoor four-wall handball/racquetball/squash courts; a swimming pool; and multipurpose 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.



# RESEARCH AND GRADUATE STUDIES

Frederic Yui-Ming Wan, 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 about 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, graduate student services, degree awards, fellowship and assistantship administration, 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, University/Industry relations, 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 activities including research administration, 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.

While most research takes place at the academic unit level, the academic quality of many of UCI's educational programs is enhanced by interdisciplinary research activity represented in Organized Research Units, Irvine Research Units, and Focused Research Programs that extend beyond unit boundaries.

## Office of University/Industry Research and Technology

The Office of University/Industry Research and Technology (UIRT) fosters and coordinates relationships between UCI and industry in sponsored research and technology transfer programs. Specific services for faculty include searches for industrial research support, agreements for research materials transfer and testing, assistance with invention disclosures, patentability assessment, and conflict of interest administration. Specific services for business and industry include access and linkages to faculty researchers, licensing technology, assistance with research contracts, intellectual property, research materials transfer, and technology information. UIRT acts as a coordinating focal point for all elements necessary for faculty to establish formal research and technology linkages with companies.

## THE UC-ACCESS PROGRAM

The UC-ACCESS Program facilitates research partnering, technology transfer, and resource sharing throughout the UC system and with outside entities, particularly industry. Headquartered at UCI within UIRT, UC-ACCESS is an online system of databases and matchmaking services available via the World Wide Web. Covering resources available at UC's nine campuses and three UC-managed Department of Energy National Laboratories, UC-ACCESS includes information on faculty expertise, equipment and facilities available for sharing, research centers, technologies available for licensing, and company technology needs. Search capabilities allow the University user to discover collaboration opportunities within the UC system, identify potential industry research sponsors, and locate suitable technology licensees. For assistance in locating and utilizing the UC-ACCESS system, please call (714) 824-7295 or send e-mail to [ucaccess@uci.edu](mailto:ucaccess@uci.edu).

## University of California Humanities Research Institute

The University of California Humanities Research Institute, located at UCI, was founded in 1987 to serve as the humanities center for the nine campuses of the University of California. UCHRI's distinctive mission is to foster intellectual community across campus boundaries, to mobilize the strength of the University of California humanities faculty as a whole, and to promote innovative collaborative and interdisciplinary research in the humanities and related disciplines.

At the heart of UCHRI's activities are the Residential Research Groups which bring together both UC and non-UC faculty and advanced UC graduate students to work in collaboration on interdisciplinary topics. The Institute also offers the possibility of multi-year programs of coordinated residential research groups and conferences. Office space for up to 23 resident fellows and modest housing on the UCI campus is provided.

UCHRI sponsors scholarly conferences both at the Institute and on the various UC campuses, as well as seminars and workshops for a variety of planning purposes. In addition, UCHRI has an agreement with the University of California Press regarding publication of scholarly work from its conferences and residential groups; scholarly work done under the auspices of UCHRI has also appeared under a variety of other imprints.



## Organized Research Units

Organized Research Units (ORUs) normally consist of an inter-departmental group of faculty, students, and other researchers engaged in a continuing program of multidisciplinary or interdisciplinary research, supported by both University and extramural funding. The work of some ORUs is directed toward the solution of complex contemporary problems, while others conduct basic research essential to the understanding of natural or social phenomena or of humanistic ideas and expressions. The following *Organized Research Units* have been established on the Irvine campus by The Regents of the University.

### 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. The Cancer Research Institute serves as the basic science arm of a National Cancer Institute-designated Cancer Center, which also includes the Chao Family Clinical Cancer Research Center and the Cancer Surveillance Program of Orange County.

### 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, research associates, 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 Departments of Cognitive Sciences, Psychobiology, Pharmacology, and Physics and Astronomy, as well as faculty from other UC campuses.

### CENTER FOR RESEARCH ON INFORMATION TECHNOLOGY AND ORGANIZATIONS

The Center for Research on Information Technology and Organizations (CRITO) is a multidisciplinary Organized Research Unit that conducts theoretical and empirical research in the field of information technology (IT). CRITO focuses on the management, use, and impact of IT in the emerging global, competitive marketplace, and the policy issues raised by its use. Under its umbrella, CRITO researchers pursue three programs of study: organizational implications of information technology, management of information technology, and technology policy and societal issues.

Faculty from the Graduate School of Management, the Department of Information and Computer Science, the School of Social Sciences,



and the Department of Education conduct research through the unit. There are approximately 15 faculty associates and 30-45 students involved in research administered by CRITO.

CRITO's research projects also reflect a multidisciplinary nature. Ongoing studies include how computer integrated manufacturing (CIM) and world-class manufacturing practices assist coordination in manufacturing firms; the study and survey of the impacts of computing on work groups in office settings; the analysis of the effects of IT on the restructuring of work, employee performance, quality of work life, and differences in these outcomes based on gender; and studies of global growth of use of computers and other information technologies. Faculty research also involves the effects of computerization on work in organizations; interorganizational systems; information, control, and organization performance; IT investments; effectiveness of computers in government; computer support systems for group decision making; computers in the home; informatization of society; and estimation of demand for computing the U.S.

In support of these research programs, CRITO sponsors regular seminars among faculty and students; cosponsors and hosts talks by nationally and internationally distinguished researchers in the field; assists in the preparation of proposals to government, foundations, and industry for extramural funding to support research programs and training of the next generation of researchers; and maintains a working paper series of reports and publications documenting its research. In addition, CRITO works with the campus academic units to match students with graduate assistantships and work-study positions that are available in conjunction with CRITO research projects.

### 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.

The Institute investigates problems according to three-year research programs, which are concluded with the publication of results. A recently completed research project of the Institute concerns the complex relations among politics, theory, and contemporary culture in current critical theories. The results are published in *Politics, Theory and Contemporary Culture*, edited by Institute Director Mark Poster (Columbia University Press, 1993).

Research on "Culture and the Problem of the Disciplines" investigates how and why the question of culture has become a focus of theorizing in several disciplines and intellectual currents. The goal in this project is both to explore the role that cultural presuppositions and theories of culture have played in critical theory and to explore the theoretical presuppositions underpinning the notion of culture in its various historical and disciplinary forms.

The Institute's newest research project, "The Transnational Networks of Globalization," will investigate four networks contributing to new theories of international and global organization: corporate, cultural, technological, and environmental. This project began with research contributions from members of the Institute and distinguished visitors to the Institute in 1995 and will be completed in 1998.

The Institute also sponsors various research ventures with other institutions of higher education, including the 1995 Summer Institute on "American Literature, Multiculturalism, and Critical Theory,"

sponsored by the National Endowment for the Humanities, Division of Education, and involving faculty from high schools, community colleges, and four-year colleges and universities in the Southern California region.

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 Wellek 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. DBC investigators are studying the processes of cell division, migration, and differentiation at the molecular, genetic, and cellular levels using a variety of experimental organisms, as well as human material. 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 and single-cell microinjection. These facilities are part of the Optical Biology Shared Resource Facility of UCI's newly designated National Cancer Institute Cancer Center. One of the DBC investigators is director of a National Human Genome Research Center at UCI responsible for mapping chromosome 5.

The DBC administers two National Institutes of Health training grants, one in developmental mechanisms underlying congenital defects and one in developmental neurobiology; these provide support for both graduate students and postdoctoral investigators.

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 BRAIN AGING AND DEMENTIA

The goal of the Institute is to mobilize and unify University resources to discover meaningful ways to prevent decline in brain function with aging prior to its inception and to reverse loss of function once it has occurred. The elusive, yet attainable goal of "successful aging," maintaining functionality in one's later years, is one of the great challenges facing the nation in the next century. While many individuals continue to maintain and even improve their intellectual and cognitive skills, others suffer a serious and seemingly irreversible loss of cognitive function and develop dementias, most commonly Alzheimer's disease. The Institute is a fully integrated basic science/clinical research program that operates: a Dementia Assessment and Treatment Clinic; a Brain Imaging Acquisition/Analysis Unit; a Tissue Repository for cellular and molecular analysis of the aged and Alzheimer's brain; and a comprehensive database of clinical and research data. Research is multidisciplinary employing the latest techniques in computer science, artificial intelligence, molecular biology, and neuroscience. The Institute also sponsors a specialized educational track in brain aging and dementia for advanced students who wish to develop a career opportunity in an exciting and expanding field. The Institute is the site of a National Institute on Aging Alzheimer's Disease Research Center (jointly with the University of Southern California) and a State of California Department of Health Alzheimer's Disease Diagnostic and Treatment Center.

Faculty from the Departments of Psychobiology, Neurology, Radiology, Anatomy and Neurobiology, Molecular Biology and

Biochemistry, Microbiology and Molecular Genetics, Cognitive Sciences, Information and Computer Science, and Electrical and Computer Engineering, and the School of Social Ecology comprise the Institute's core group of investigators.

### **INSTITUTE FOR MATHEMATICAL BEHAVIORAL SCIENCES**

The goal of the Institute for Mathematical Behavioral Sciences is to foster research in the application of mathematical methods to describe and to better understand human behavior, both individual and social. The Institute sponsors specialized seminars and colloquia, a visiting scholars program, summer workshops, and focused research groups of faculty, students, and visitors, and it maintains a Technical Report Series. Facilities include a computer network for research purposes. Participants include faculty from the Departments of Cognitive Sciences, Economics, Politics and Society, Anthropology, and Sociology in the School of Social Sciences; 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.

### **INSTITUTE FOR SURFACE AND INTERFACE SCIENCE**

The Institute for Surface and Interface Science (ISIS) brings together faculty and researchers in the fields of chemistry, physics, and electrical engineering for collaborative projects aimed at advancing knowledge through interdisciplinary research. ISIS affiliates engage in 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 effects and processes. Among these are corrosion and lubrication incidents, the behavior of semiconductor devices, the fabrication of integrated circuits, and the performance of catalysts used in automobile exhaust systems and throughout the chemical industry. Research conducted within the Institute is funded by a variety of extramural sources including private industry as well as several federal agencies. Collectively, research funds also help support a number of ISIS-sponsored activities, including a Distinguished Lecturer Program which brings senior scholars from around the world to UCI, visiting fellows programs, postdoctoral fellowships, seminar presentations, student research forums, and workshops.

### **INSTITUTE OF TRANSPORTATION STUDIES**

The Institute of Transportation Studies (ITS), a University of California Organized Research Unit with branches at Irvine, Davis, and Berkeley, was established to foster research, education, and training in the field of transportation. A fundamental goal of the Institute is the stimulation of interdisciplinary research on contemporary transportation issues. ITS research at UCI involves faculty and students from the Schools of Engineering, Social Ecology, and Social Sciences; the Graduate School of Management; and the Department of Information and Computer Science. The Institute also hosts visiting scholars from the U.S. and abroad to facilitate collaborative research and information exchange, and sponsors conferences and colloquia to disseminate research results.

Research at ITS covers a broad spectrum of transportation issues. Current funded research projects at ITS Irvine focus upon: intelligent transportation systems, particularly advanced transportation management systems; planning and analysis of transportation systems; transportation systems operation and control; artificial intelligence applications; transportation engineering; transportation safety; fiscal and administrative issues in public transit; and environmental and energy issues.

The Institute is part of the University of California Transportation Center, one of 10 Federally designated centers for transportation research. The ITS Advanced Transportation Management Systems

(ATMS) Laboratories provide facilities for the teaching, research, and development of intelligent transportation systems. These laboratories form the backbone of the State of California's research initiative in ATMS.

The transportation research program at UCI is supported by the ITS Transportation Library at UC Berkeley. In addition, ITS at UCI subscribes to all transportation research journals and offers a variety of computer-based information retrieval services.

The Institute maintains a regular publication series which documents research conducted within its programs. ITS also is the editorial headquarters of four international journals—*Transportation Research Part A: Policy and Practice*; *Transportation Research Part B: Methodological*; *Transportation Research Part C: Emerging Technologies*; and *Accident Analysis and Prevention*. These journals are received by over 2,000 subscribers throughout the world.

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 Schools of Engineering, Social Ecology, and Social Sciences 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.

### **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.

### **ADVANCED COMPUTING**

The IRU in Advanced Computing (known as RUAC) was created with the purpose of providing a common research home for all investigators who use highly complex and advanced computing in theoretical or experimental research. RUAC promotes focused or interdisciplinary research where high-performance computing or computational sciences are the main tool or objective. RUAC has also initiated an Industry/University Consortium Center for Numerical Algorithm Development. Its activities include, but are not limited to: seminars, public lectures, symposia, formal or informal gatherings, and one-day work group sessions which include industry. Undergraduate, graduate, postdoctoral, and continuing education research opportunities are actively pursued as part of RUAC's activities.

### **ANIMAL VIROLOGY**

The Program in Animal Virology combines basic science and clinical faculty in the Departments of Molecular Biology and Biochemistry in the School of Biological Sciences, and the Departments of Microbiology and Molecular Genetics, and Pathology in the College of Medicine in an interactive and collaborative environment united with a common interest in aspects of animal virology. The program is also an integral part of the National Cancer Institute-designated Chao Family Clinical Cancer Research Center at UCI. The major goal of the program is to provide a collaborative resource for the dissemination of expertise in a number of animal virus systems as models and vectors for the study of molecular aspects of pathogenesis, gene expression, and gene delivery.

## 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 information and computer systems for scientific and environmental applications. 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, software/hardware codesign, and design science.

The goal of the IRU is to provide a broad spectrum of research opportunities for graduate and undergraduate students, to enhance interaction with distinguished scientists from both industry and universities from the United States and abroad, and to foster greater cooperation between the University and industry in solving related problems.

## GLOBAL PEACE AND CONFLICT STUDIES

Although housed in the School of Social Sciences, participating faculty in the IRU in Global Peace and Conflict Studies are also drawn from the Schools of Humanities and Social Ecology, and from the natural sciences. 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 education in the community at large.

Five interconnected themes characterize the cross-disciplinary research of the cooperating faculty: the interaction of foreign policy making 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 the shaping of human attitudes and perceptions with respect to peace and conflict.

## HEALTH POLICY AND RESEARCH

The IRU in Health Policy and Research fosters multidisciplinary studies on access to medical care and prevention among special populations. Faculty from the College of Medicine, the Schools of Social Sciences and Social Ecology, and the Graduate School of Management comprise the core group of investigators.

The IRU's goals include conducting multidisciplinary research to address important questions related to access to medical care and prevention in special populations; exploring interventions and health policy options that will improve access to medical care and prevention in these groups; helping to guide policy makers in their decisions about health care initiatives for special populations; and facilitating the collaboration of faculty, students, and the professional community through the expertise, facilities, and activities of the unit.

Ongoing studies include: (1) evaluation of cancer-related knowledge, attitudes, and behaviors among Latino, American Samoan, and Vietnamese populations; (2) assessment of AIDS prevention strategies among Latinos; (3) investigation of injury prevention among children; and (4) exploration of access to medical care and the somatization disorder among Latino refugees.

In support of research, the IRU sponsors health policy and research seminars during which faculty associates and guests discuss ongoing or planned research; guest lectureships conducted by nationally distinguished researchers and practitioners; and workshops on topics related to the unit's focus for faculty, students, government officials, and community members. In addition, the IRU helps health

policy researchers to develop and submit grant proposals and administers grants which have been funded.

## SOFTWARE

Computer software development and maintenance is a major component of the county's, state's, and nation's economy. The IRU in Software (IRUS) is focused on enhancing abilities to design, produce, assess, and maintain diverse types of software through a program of applied research and technology partnerships with industry. Technical emphases of IRUS include software processes and process improvement, user interface software technology, computer-supported cooperative work, analysis and testing, metrics and measurement, and software understanding.

In support of these objectives IRUS sponsors monthly technical interchange meetings, which bring over 100 professionals from California industry to campus each month. One of these meetings is the Southern California Software Process Improvement Network (SPIN). Another meeting series is focused on software engineering tools and techniques. IRUS also sponsors several annual events, including a symposium on software technology, and focused, three-day technical research reviews.

Information on IRUS and its regular activities can be obtained on the World Wide Web at <http://www.ics.uci.edu/IRUS>, or by telephone at (714) 824-2260.

## 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. The following groups of faculty, students, and other researchers currently are recognized as Focused Research Programs.

### DEMOCRATIZATION

The Democratization Focused Research Group is a collegium of scholars interested in the theoretical and practical issues of democratization for politics, social relations, and everyday life. The research and educational activities of the program focus on three areas. First, one of the most important and exciting areas of contemporary politics concerns the pressure for democratization in non-democratic societies in Eastern Europe, the Pacific Rim, and Latin America. The faculty are engaged in research and outreach activities that address the questions of the cultural and institutional foundations for successful democratic transitions in these nations.

Second, the FRP considers democratization to be an ongoing process that raises new political challenges even for established democracies such as the United States and Western European nations. Most advanced industrialized nations confront similar problems to the United States in dealing with a changing economic structure, new forces of cultural change, and a reshaping of the citizen's relationship to government. The faculty are studying these contemporary political issues; this research can provide valuable new evidence on the character of the American political system as well as contribute to a richer understanding of the democratic process.

The third research theme focuses on the expansion of democratization issues beyond the polity. Within the established democracies, there is new pressure for the democratization of social institutions. The faculty are studying the politicization of social relations and social life, and the expansion of democratization issues to the family and the workplace.

In recognition of the extensive research and educational activities associated with the FRP, the National Science Foundation selected UCI in 1994 as a national center for the study of democratization and democratic politics. The NSF Graduate Research Training Program in Democratization and Democratic Politics provides a multi-year grant to train Ph.D. students in issues of empirical democratic theory, as it applies to newly democratizing nations and the expansion of democracy in advanced industrial societies.

The FRP is an interdisciplinary effort involving more than 30 political scientists, sociologists, economists, psychologists, and management specialists at UCI and other universities throughout the world. Affiliate faculty include scholars from England, France, Germany, Italy, Japan, and Taiwan.

## ENVIRONMENTAL BIOTECHNOLOGY

The Environmental Biotechnology Focused Research Group is composed of faculty from the Department of Microbiology and Molecular Genetics in the College of Medicine, the Departments of Civil and Environmental Engineering and of Chemical and Biochemical Engineering in the School of Engineering, and the Department of Environmental Analysis and Design in the School of Social Ecology. Combining research expertise in environmental microbiology, environmental and biochemical engineering, and molecular genetics and virology, the faculty have identified two main multidisciplinary research areas: bioremediation and environmental diagnostics.

UCI faculty research spans a variety of topics. Projects include: virus transport and fate in ground water recharged with sewer water using a genetically engineered Norwalk virus capsid without nucleic acid, and differentiation between human and animal waste in the environment using molecular probe and PCR; categorization of bacterial populations entering ground waters from wastewater recharge using RNA probes; the development of enhanced PCR techniques to detect hepatitis, Norwalk, and rotaviruses in aquatic environments and shellfish; and biofiltration techniques for removal and degradation of TCE.

## 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.

Information about graduate education at UCI is published here in the *UCI General Catalogue* and in individual graduate program publications. The staff of the Office of Research and Graduate Studies is prepared to answer questions about admission, academic policies and procedures, graduate programs and degrees, financial assistance, student services, and other matters of concern to applicants or graduate students. The Office is located in 120 Administration Building; telephone (714) 824-6761.

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 advisement 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

The Application for Graduate Admission must be completed either electronically or by using a paper application. The electronic application is available on the World Wide Web at <http://www.rgs.uci.edu/grad/>. A paper application may be obtained by contacting a specific graduate program or the Office of Research and Graduate Studies.

The application fee is \$40 and is nonrefundable. Payment instructions are available in both the electronic and paper versions of the application. Application fee waivers are available for needy domestic students and targeted underrepresented minority and women applicants; students may be asked to provide verification of ethnicity.

Detailed instructions for both the electronic and paper applications are included in their respective formats. For additional information or to obtain a paper application, call (714) 824-6761, or send e-mail to [ogsfront@ccmail.rgs.uci.edu](mailto:ogsfront@ccmail.rgs.uci.edu).

### WHEN TO APPLY

For all graduate programs, applications should be completed by January 15 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. Some schools and departments have earlier or later deadlines for filing the application. Applicants should consult their prospective department or school for information. Telephone numbers for the schools and departments may be obtained by calling (714) 824-6761.

## 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 requires that M.B.A. applicants take the Graduate Management Admission Test (GMAT), and (2) no standardized tests are required of those who seek the Master of Fine Arts degree or the Master of Arts in Teaching. 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. (A computerized version of the GRE is now offered Monday through Saturday at Sylvan Technology Learning Centers.) The standard written 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, NJ 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, with the exception of 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. The TOEFL 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. (The Graduate School of Management requires a minimum score of 570.) 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. The TOEFL is given at UCI.

## 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). In order for a TA offer to be made, applicants must score above a certain minimum score. The TSE 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. The TSE is given at UCI.

## 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 admission to graduate study. 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. 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 and may not be applied toward the requirements for an advanced degree.

The grade of Incomplete (I) may be assigned by an instructor when the student's work is of passing quality but is incomplete because of circumstances beyond the student's control. 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 is expected of graduate students at the University of California. Study for the Ph.D. requires a full-time commitment from the doctoral student. Full-time study is defined as enrollment in at least 12 units of upper-division or graduate academic credit per quarter, including credit for supervised research or teaching. Graduate students may enroll in lower-division courses with the approval of their academic advisors, but such courses are not considered to be part of any graduate program.

Graduate students ordinarily may not receive credit for more than 12 units per quarter in graduate courses, or 16 units in upper-division courses, or a proportionate number in combination. Course loads in excess of 16 units must be approved in advance by the student's Graduate Advisor and the Dean of 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. In general, part-time status is available in master's and credential programs where part-time study has been judged academically feasible by faculty and approved by the Graduate Council. Under this policy, part-time enrollment at the graduate level is defined as enrollment for eight units or less. 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). University resources and facilities, including housing, are ordinarily unavailable to students on leave.
4. A student failing to register for the next regular academic session following the expiration of leave will lose graduate standing and will be subject to the following readmission policy.

## READMISSION

A student who previously withdrew from the University, or whose student status has lapsed, may request readmission to graduate study by submitting 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 quarter of graduate study at the home campus and will have well-defined academic objectives. Approval of the faculty advisor, the host department(s), and the respective deans of graduate studies is required. Direct arrangements between faculty members on the two campuses are encouraged so as to ensure that courses, seminars, or facilities will be available to meet the participating student's needs. Students may take courses on more than one campus of the University in the same academic session.

The exchange student enrolls and pays fees on the home campus and then enrolls at the host campus, following the procedures of that Registrar's Office. A report of academic work completed will be transferred to the student's academic record on the home campus. 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.

## 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 the Arts (M.F.A. in Dance, Drama, Music, 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.

Master of Urban and Regional Planning (M.U.R.P.) degrees are awarded by the School of Social Ecology upon successful completion of the equivalent of two years of full-time study in contemporary methods of planning and policy analysis.

### DOCTOR OF PHILOSOPHY DEGREE

The Doctor of Philosophy (Ph.D.) degree is awarded on the basis of evidence that the recipient possesses knowledge of a broad field of learning and expert mastery of a particular area of concentration within it. The research dissertation is expected to demonstrate critical judgment, intellectual synthesis, creativity, and skill in written communication.

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 academic unit on behalf of the Graduate Council. The Report on Qualifying Examination for the Degree of Doctor of Philosophy (Form I) 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 \$50 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 academic unit chair (on behalf of the Dean of Graduate Studies and 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.

### DOCTOR OF EDUCATION DEGREE

The Doctor of Education (Ed.D.) is awarded by UCI in conjunction with the School of Education at the University of California, Los Angeles. Refer to the Department of Education section of this *Catalogue* for more information.

### THESES AND DISSERTATIONS

Candidates for the Ph.D., Ed.D., and certain master's degrees must conduct an extensive research project and submit a dissertation or thesis in order to fulfill degree requirements. Research expenses are not supported by the University, and the cost of preparing the dissertation or thesis ordinarily ranges from \$200 to \$1,000, but may be considerably more.

After approval by the doctoral or thesis committee appointed for each candidate by the academic unit, on behalf of the Graduate Council, two copies of the dissertation or 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. A thesis and dissertation manuscript preparation manual is available for sale in the UCI Bookstore, in the Library for photocopying, and on the World Wide Web at [gopher://uniedit.cwis.uci.edu:7026/11/grad](http://uniedit.cwis.uci.edu:7026/11/grad).

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.

Those students who complete requirements and submit theses/dissertations after the end of the tenth week of classes and prior to the start of the subsequent quarter will earn a degree for the following quarter, but *will not* be required to pay fees for that quarter. Please note that in order to avoid payment of fees, manuscripts, all forms, and degree paperwork must be submitted prior to the first day of the quarter in which the degree is to be earned.

### THE FILING FEE

Under certain circumstances, a student who has advanced to candidacy for a graduate degree may be eligible to pay a Filing Fee equal to half of the Registration Fee in lieu of registration, 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 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.

All graduate students are encouraged to submit a financial aid application each year to access state and federal grants and loans. The *Free Application for Federal Student Aid* is available in the Office of Graduate Studies and the Financial Aid Office after January 1, with a deadline of March 2 each year. The Financial Aid section in this *Catalogue* and the *Financial Aid at UCI* handbook, available from the Financial Aid Office, contain information about assistance based upon financial need that is administered by the Financial Aid Office.

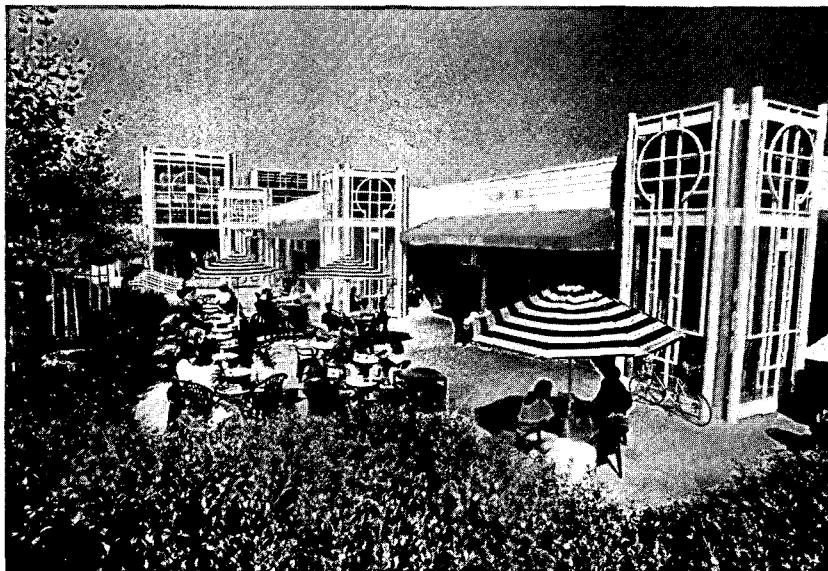
Applicants interested in assistantships or fellowships should so indicate on their application when applying for admission. For all graduate programs, applications should be completed by January 15 to receive full consideration for fellowship and assistantship awards. Continuing students interested in 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.

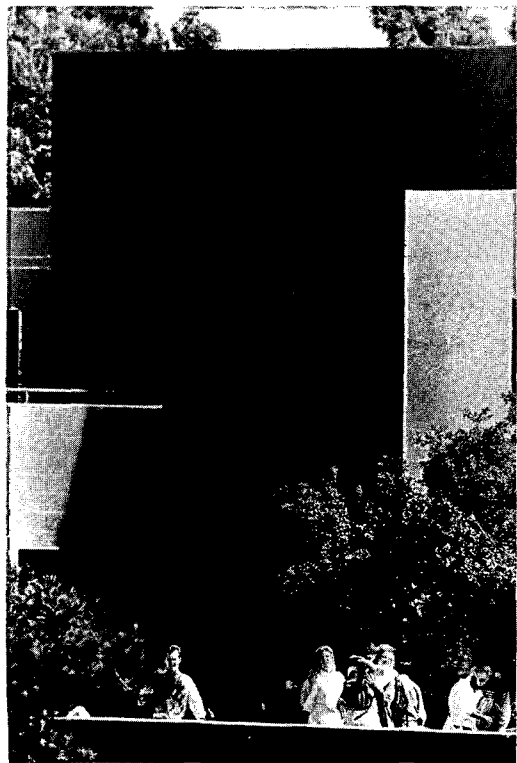
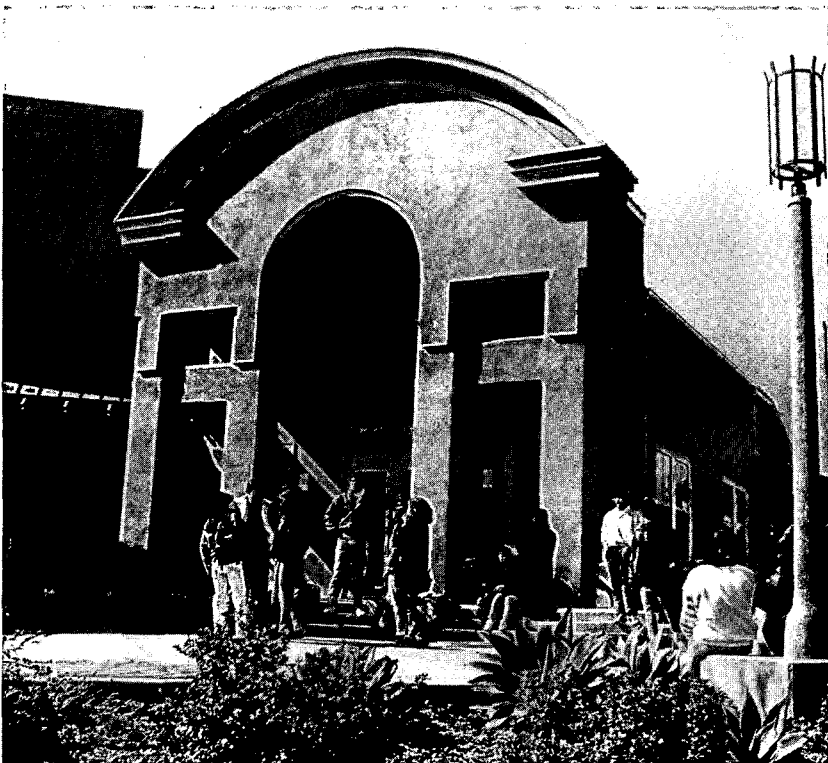
Regents', UCI Chancellor's Fellowships, and Chancellor's Opportunity Fellowships are awarded to a number of promising students entering graduate study at UCI leading to the Doctor of Philosophy, Doctor of Education, or Master of Fine Arts degree. Awards may include a stipend, all required student fees, 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 targeted 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.



*A selection of campus buildings (clockwise from the top left corner): UCI Student Center, Studio Four, Student Services II, University Extension, and the Medical Plaza.*



# SCHOOL OF THE ARTS

Jill Beck, **Dean**

Arts Student Affairs

101 Mesa Arts Building; (714) 824-6646

World Wide Web: <http://www.arts.uci.edu/>

The School of the 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 Dance, Drama, Music, and Studio Art, and the program in Arts Interdisciplinary. Both undergraduate and graduate degree programs are offered and include extensive studio, workshop, and performing experiences, theoretical and historical studies, and work in criticism.

All of the School's departments are located in the Arts Village, facilitating daily interaction among student and faculty in all 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, the Music Media Center, the Arts Computing Laboratory, and a television studio. Professionally managed and staffed theatrical production shops and publicity and box offices supporting the School's extensive production and performance schedule also are located in the Village.

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 Irvine Barclay Theatre, a fully equipped, 750-seat performing facility.

In addition to the artists, scholars, and performers who are members of the Arts faculty, visits by distinguished guest artists/teachers are a feature of the School's activities.

Students receive assistance with program planning and a variety of other support services from the professional staff in the Office of the Arts Student Affairs. The staff also assists the faculty in providing academic counseling to Arts students.

## DEGREES

Dance .....	B.A., B.F.A., M.F.A.
Drama .....	B.A., M.F.A.
Fine Arts .....	B.A., M.F.A. <sup>†</sup>
Music .....	B.A., B.Mus., M.F.A.
Studio Art .....	B.A., M.F.A.

<sup>†</sup>Admission unavailable until further notice.

## Special Programs of Study

### CONCENTRATION IN MEDIEVAL STUDIES

The concentration in Medieval Studies allows undergraduate students in the Schools of the Arts and Humanities to augment their major by completing a coherent program of courses in the area of medieval studies. See the School of Humanities section for additional information.

### MINOR IN RELIGIOUS STUDIES

The interdisciplinary minor in Religious Studies focuses on the comparative study of religions in various cultural settings around the world. The curriculum seeks to provide a wide-ranging academic understanding and knowledge of the religious experience in society through study in the Schools of Humanities, Social Science, Social Ecology, and the Arts. See the Interdisciplinary Studies 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 host universities and colleges throughout the world. See the Education Abroad section for additional information.

## 3-2 PROGRAM WITH THE GRADUATE SCHOOL OF MANAGEMENT

Outstanding 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; additional information is available from the individual departments. In keeping with the Academic Senate Resolution no more than 12 percent of the graduating seniors may receive honors. Other important factors are considered (see page 55).

The School of the Arts has some scholarship monies available to incoming and to continuing students on both the undergraduate and graduate levels. For complete information, please contact the Arts Student Affairs Office.

## Scholarships

**Edna Helen Beach Scholarship.** Provides \$1,000 per year for two years for an incoming freshman student, and \$1,000 for one year for an incoming transfer student. Recipient must be gifted and talented, and will be selected from eligible students with special emphasis on those from traditionally underrepresented backgrounds who would not otherwise be able to attend a major research institution.

**Elftmann Scholarship.** Provides \$500 annually to one student in the School of the Arts.

**Leo Freedman Graduate Fellowship.** For outstanding applicants from Orange County, California, preferably from Anaheim; covers tuition and fees and includes a small stipend.

**Laguna Arts Festival Scholarship.** Amount varies annually; approximately \$2,000 in recent years. Awarded at the discretion of the Dean of the School of the 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.

**Ladislav Reday Memorial Scholarship.** Up to \$2,000 awarded to a Music major in any instrument.

**David Lee Shanbrom Memorial Music Scholarship.** Up to \$3,000 awarded to an outstanding Music student in any instrument.

**Winifred W. Smith Music Scholarship.** Up to \$2,000 awarded to a student with stringed instrument specialization.

**Marcella Louise and Leonard Seiber Jones Music Scholarship.** Up to \$2,000 awarded to an incoming Music student.

**Timothy Phillips Memorial Scholarship.** Provides \$2,000 annually to a Music major.

**Marjorie and Robert Rawlins Scholarship.** Provides four \$3,000 scholarships, renewable for four years of undergraduate study, to be awarded to students majoring in piano, violin, viola, or cello. Recipients must be full-time Music majors and must maintain a 3.2 GPA. By audition with the Music faculty scholarship committee.

**Harry and Marjorie Slim Memorial Scholarship.** Provides \$1,000 annually to a Music student.

**Gregory Donnell Smithe Memorial Scholarship.** Awarded to a violoncello or string student.

**Elizabeth and Thomas Tierney Scholarship.** Provides five \$1,000 awards annually. 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 57–61.

**School Requirements:** None.

**Departmental Requirements:** Refer to individual departments.

## Graduate Program

The primary endeavor of the School of the Arts is the creative act. Research activities are pursued both as an end in themselves and as a source that can inform both performance and the studio experience. The intellectual activity of theoretical, literary, and historical courses complements the practical work in studio workshops and performance. The aim of the M.F.A. programs in Dance, Drama, Music, and Studio Art is, thus, to produce literate artists who are responsive to intellectual stimuli, disciplined, and capable of integrating existing knowledge into creative projects. It is the strong belief of the School that intellectual integrity and creative excellence cannot exist without each other.

### ADMISSION TO THE PROGRAM

Applications are accepted for fall quarter admission only, and ordinarily must be completed by March 1 for all the Master of Fine Arts degrees, as the number of graduate students that can be admitted to the School of the 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 January

15, and are also encouraged to apply for financial assistance through the Financial Aid Office. The School of the Arts has a modest number of teaching assistantships available in all areas, and all candidates are automatically reviewed for teaching assistantship positions; the School informs successful candidates by June 1 for the following academic year.

Upon admission to the program the student is assigned an advisor. 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.

## Arts Interdisciplinary

101 Mesa Arts Building; (714) 824-6646  
Stephen Barker, **Director**

### Faculty

Stephen Barker, Ph.D. University of Arizona, *Associate Dean of the School of the Arts, Director of Arts Interdisciplinary, Department Chair (Acting) of Studio Art, and Associate Professor of Drama*

The program in Arts Interdisciplinary is designed for students who wish to investigate the various disciplines in and beyond the arts. Although participation in studio classes is required, the program emphasizes the study of the history, theory, and criticism of the arts in the School's various departments and their relations to other disciplines. The nature of the program provides each student the opportunity to plan a uniquely individual course of study with the approval of the Director or an appropriate advisor. Because the Arts 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 Director 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 Arts 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 Arts 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, 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, Ghana, Egypt, and India.

### REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57–61.

**School Requirements:** None.

#### Program Requirements

Three one-year surveys in three different areas of the arts selected from Art History 40A, 40B, 40C, 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 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 the arts are encouraged.



**Sample Program for Freshmen**

Fall	Winter	Spring
Survey Course	Survey Course	Survey Course
Foreign Language	Studio Course	Studio Course
English and Comp	Foreign Language	Foreign Language
Lit. WR39A	English and Comp.	English and Comp.
	Lit. WR39B	Lit. WR39C

With the exception of the courses listed here, Arts Interdisciplinary majors choose courses, in accordance with the program requirements, from those listed under Dance, Drama, Music, and Studio Art.

**Courses in Arts Interdisciplinary****LOWER-DIVISION**

**Arts 1A, B, C Arts Core (4, 4, 4) F, W, S.** General introduction to central themes, issues, and practice of the arts, and to the School of the Arts at UCI. (IV)

**Arts 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.

**Arts 50 Multimedia Arts: History, Criticism, and Technology (4) F, W, S.** Introduction to the history, criticism, and practices of multimedia technology. Students learn through hands-on experience, work in multimedia, in its various forms. Prerequisite: prior computer experience with Macintosh or Windows.

**UPPER-DIVISION**

**Arts 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 Arts Interdisciplinary majors.

**Arts 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.

**Arts 150 Introduction to the Alexander Technique (2) F, W, S.** Group lessons. Applying the principles of the Alexander Technique to all movement, including professional activities. Expanding awareness through development of the kinesthetic sense; exploring choices in movement through recognition of habit patterns. Increased ease of movement, enhanced coordination, stress reduction, poise.

**DEPARTMENT OF DANCE**

301 Mesa Arts Building; (714) 824-7283

Janice Gudde Plastino, **Department Chair**

**Faculty**

Don Bradburn, Former Dancer/Choreographer, Columbia Broadcasting System (CBS-TV), *Lecturer in Dance* (ballet, choreography, video choreography, dance photography)

Jill Beck, Ph.D. City University of New York, *Dean of the School of the Arts and Professor of Dance* (dance notation and reconstruction)

Mary Corey, M.A. University of California, Riverside, *Certified Professional Labanotator, Associate Professor of Dance* (dance history, modern dance, dance notation and reconstruction)

Diane Diefenderfer, Former Soloist, Los Angeles Ballet, Eglevsky Ballet Company, Frankfurt Ballet Company, *Certified Instructor in Pilates Technique, Lecturer in Dance* (ballet, pointe, Pilates)

Israel "El" Gabriel, Former Assistant Artistic Director, Bat Dor Dance Company of Israel, *Lecturer in Dance* (ballet, modern, pas de deux, repertory)

Bernard Johnson, A.A.S. Fashion Institute of Technology; *Dance Costume Designer, Director/Choreographer, concert, theatre, film, television, Assistant Professor of Dance* (costume design, advanced jazz)

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 Emeritus of Dance* (ballet, modern, dance notation, choreography, movement analysis)

Janice Gudde Plastino, Ph.D. University of Southern California, *Department Chair and Professor of Dance* (modern, kinesiology/anatomy, research methods, choreography, dance science/medicine)

Barbara Bailey Plunk, Former Dancer/Choreographer, M.G.M., NBC-TV, Board of Directors American School of Dance, *Lecturer in Dance* (ballet, teaching of dance, theory, administration)

Larry Rosenberg, B.A. University of California, Los Angeles; Former Dancer, Eliot Feld Ballet, *Lecturer in Dance* (ballet, repertory, pas de deux)

Nancy Lee Ruyter, Ph.D. Claremont Graduate School, *Associate Dean of the School of the Arts and Associate Professor of Dance* (dance history, Spanish dance, choreography, and research methods)

Deidre Sklar, Ph.D. New York University, *Assistant Professor of Dance* (philosophy/aesthetics/criticism, dance ethnology, research methods, dance history)

Alan Terricciano, M.F.A. Eastman School of Music, *Assistant Professor of Dance* (musical resources, music for dancers, dance accompaniment, composition)

The Department of Dance fosters an educational environment in which performance opportunities, creative projects, and theoretical studies complement and reinforce each other and provide a foundation for careers in dance. The program focuses on studio experience in the techniques of classical ballet, modern dance, jazz, tap, and selected ethnic dance forms. Theoretical studies include history; philosophy, aesthetics, and criticism; Laban studies; dance training methods; and dance science.

The objective of studio work is to develop kinesthetic resources, precision, flexibility, creativity, and freedom in a coordinated and intelligently responsive dancer. The techniques of classical ballet, modern dance, and jazz constitute crafts and styles for the dancer that serve not only as a basis for the training of the body, but also as a basic language of movement for the choreographer.

The theoretical, historical, and scientific courses are designed both to broaden the perspective of those students whose first interest is performance or choreography, and to provide a foundation for those students who plan to pursue careers in the academic, scientific, or administrative fields of dance.

The dance archives in the UCI Library Special Collections offer a rich source of research materials which enhance the Dance program. Among other special holdings, the archives include the extensive Ruth Clark Lert collection of dance books, journals, photographs, original costume sketches, and memorabilia of dance in Europe and the United States from pre-World War I to the present.

**CAREERS FOR THE DANCE MAJOR**

Careers in dance require excellent training and extraordinary discipline, tenacity, and dedication. Graduates of the Department have an excellent record of placement in the many fields of dance. Some have become professional dancers in ballet companies (including the San Francisco, Frankfurt, and Stuttgart Ballets); in modern dance companies (including the Bella Lewitzky, Lar Lubovitch, Garth Fagan, and Bat-Dor Companies); in musicals (including *Jerome Robbins' Broadway*, and the original cast of *Chorus Line*); and in films, television, and theatre.

In addition to training for professional dance performance and choreography, the major in dance serves as a basis for graduate study or job opportunities in fields such as dance history, dance science, dance pedagogy, dance reconstruction, dance criticism, 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 graduates. Students who are interested in a career in physical therapy or dance science will find a major in

Dance, with related course work in chemistry, physics, biology, and mathematics, to be excellent preparation for further study.

## THE UNDERGRADUATE PROGRAM

The Bachelor of Arts (B.A.) is designed for those who wish to obtain a broad undergraduate background as preparation for careers or graduate work and related fields. It offers students a dance education that stresses performance and choreography, and, at the same time, intellectual depth and scope. In addition to the core, 12 units of elective Dance courses are required. The remaining elective units required for graduation may be chosen from Dance or other disciplines in relation to a student's individual interest. While the program of study in Dance stresses technical proficiency and academic understanding in dance, the B.A. degree program also enables students to pursue elective subjects in their special areas of interest in other academic disciplines.

The Bachelor of Fine Arts (B.F.A.) degree program with specializations in Performance and Choreography, is designed for students who wish to prepare intensively for careers in those areas. The courses required in addition to the core are primarily in Dance. The B.F.A. program allows for a few free electives in other areas. Admission to the B.F.A. program is by faculty approval only.

### Proficiency Levels

In addition to meeting the general requirements for admission to UCI, applicants must demonstrate technical/creative promise. The Department holds annual entrance auditions for potential freshmen and transfer students during winter quarter prior to the fall quarter when entrance is anticipated. First-year students wishing to major in Dance must be at technique level II in at least one of the three major genres (ballet, modern, jazz).

Placement auditions for admitted students are held during Welcome Week to determine levels of technical ability for placement in courses. Transfer students wishing to pursue a B.A. degree in Dance should have completed, in addition to their breadth requirements, one course in choreography/improvisation, one course in technique analysis/injury prevention, and one course in musicianship.

Previously admitted majors who wish to obtain a B.F.A. degree with a specialization in Performance or Choreography must apply in writing at the end of the second quarter of their sophomore year. An additional audition is required for acceptance into the B.F.A. program. Once accepted, students must pass yearly evaluations to continue in the program. Transfer students wishing to pursue the B.F.A. degree must declare their intention in writing at the time of their entrance audition and demonstrate technique levels appropriate to their year. Transfer students should have completed, in addition to their breadth requirements, one year of choreography, one course in technique analysis/injury prevention, and one course in musicianship.

Students deficient in level of performance or academic preparation should be prepared to extend their studies beyond the normal four-year program in order to meet the requirements for graduation.

## REQUIREMENTS FOR THE B.A. DEGREE

**University Requirements:** See pages 57–61.

**School Requirements:** None.

### Departmental Requirements for the Major

Dance 2 (Injury Prevention/Technique Analysis); Dance 21A (Music for Dancers); Dance 60A (Choreography); Dance 90A-B-C (Dance History); Dance 100 (Kinesiology); Dance 180A-B (Laban Studies); Dance 185 (Philosophy, Aesthetics, and Criticism).

**Technique:** Students must complete at least one Dance technique course each quarter in residence. At a minimum, students must complete level II in Ballet, Modern, and Jazz (Dance 132A-B-C,

Dance 142A-B-C, and Dance 152A-B-C) and level III in either Ballet or Modern (Dance 133A-B-C or Dance 143A-B-C). Students who place above level II in any technique must take a year of that technique at the next higher level. All students must also complete one course chosen from Dance 11A, 11B, 11C (Mexican Dance), 12A, 12B, 12C (Spanish Dance), 14 (Social Dance), 52A, 52B, 52C (Tap I), 110 (Ethnic Dance), 138 (Character Dance), or 150A, 150B, 150C (Tap II). NOTE: Units earned in technique courses beyond the required amount do not count toward departmental requirements but may count toward University requirements.

**Performance:** Two performances from any of the Dance 170 series; four units of Drama 101 (Theater Production), taken during the first year in residence.

**Electives:** 12 units of electives, approved by the undergraduate advisor, must be completed within the major.

## REQUIREMENTS FOR THE B.F.A. DEGREE

**University Requirements:** See pages 57–61.

**School Requirements:** None.

### Departmental Requirements for the Major

Students must complete the departmental requirements as listed for the B.A. degree in Dance. In addition, B.F.A. students must complete the requirements for either the specialization in Choreography or Performance.

**Choreography Specialization:** Dance 60B-C (Choreography I); Dance 127A-B-C (Costume Design for Dance); Dance 162A-B-C (Choreography II) or Dance 164A-B-C (Video Choreography); Dance 165 (Choreographic Projects—one original choreographic work, approved by the faculty, must be presented in both the junior and senior years); Dance 178 (Performance Laboratory); and a minimum of two units of Drama 101C (Theatre Production: Lighting), in addition to the B.A. requirement of four units of Drama 101.

**Performance Specialization: Technique:** Dance 134A-B-C (Ballet IV) or Dance 135A-B-C (Ballet V) or Dance 144A-B-C (Modern IV); Dance 153A-B-C (Jazz III); Dance 139 (Partnering).

**Performance:** Dance 137 (Repertory); four units of Dance 178 (Performance Laboratory). Dance 170 series: must be in three additional performances beyond the B.A. requirements, and must perform at least once in Dance 170, 171, 172, and 174. Dance 171 and 172 may be repeated for credit. Students must demonstrate proficiency in at least two dance genres in these performances.

### Sample Program for Freshmen (B.A. and B.F.A. Programs)

Fall	Winter	Spring
English and Comp. Lit. WR39A	English and Comp. Lit. WR39B	English and Comp. Lit. WR39C
Dance 21A	Breadth	Breadth
Technique	Breadth	Dance 2
Technique	Technique	Technique
	Technique	Technique
	Drama 101 (2 units)	Drama 101 (2 units)

## MASTER OF FINE ARTS PROGRAM

### Degree Offered

M.F.A. in Dance.

### General Information

The M.F.A. program is an intensive program requiring a core of courses in studio and academic areas. The student's individual area of interest is explored through the thesis project in the second year. Projects or written theses may be pursued in choreography, dance training, dance history, dance science, dance reconstruction, and other areas.

## Admission

Applicants for admission to the degree program must meet the general requirements for admission to graduate study and hold a B.A. or B.F.A. in Dance or the equivalent. Candidates must meet the minimum requirements for the B.A. degree in Dance at UCI. 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. An audition in ballet and modern technique is required for admission and is held in winter quarter. At this audition, applicants must also present a prepared five-minute choreographed piece, which can be 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, and applicants are given a short writing exercise.

## Teaching Assistantships

Graduate students are encouraged to apply for teaching assistantships in areas such as notation, dance science/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.

In the second year, satisfactory attainment must be demonstrated by a major thesis: in choreography this consists of the composition and production of a choreographic work; in other areas, such as dance history, dance training, or dance science, this consists of a written thesis or a comprehensive project in a chosen area of study. All theses must be defended in a one-hour oral examination which may also test the candidate's general knowledge in the area.

The degree must be completed within three years of entering the program. Students who do not complete the degree within that time will be dropped from the program.

## Specific Degree Requirements

Seventy-two quarter units in graduate or approved upper-division undergraduate courses must be completed with a grade of at least B in each course. 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.

## Required Courses

Six courses chosen from any graduate or upper-division dance technique course; Kinesiology for Dance (Dance 201); Musical Resources (Dance 222); Teaching of Dance Techniques (Dance 225); Costume Design (Dance 227); two courses in Graduate Choreography (Dance 261); Movement Analysis (Dance 282); Philosophy, Aesthetics, and Criticism (Dance 283); Bibliography and Research (Dance 284); Thesis (Dance 286); Proseminar in Dance History (Dance 296).

By the end of their first year, students will choose their area of study for their thesis. Students who wish to produce a choreographic thesis must apply to the graduate choreography advisor during winter of their first year. The faculty will review the applications and will consider the quality of the student's work in Dance 261, as well as the choreographic proposal, in making their selection.

## Courses in Dance

### 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.

**14 Social Dance Forms (2).** Contemporary and historical forms. Current ballroom, disco, and Western square dance forms; Latin ballroom dances; Dances from the 20s, 30s, and 40s. May be repeated for credit as topics vary.

**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.

**30A-B-C Studio Workshop in Ballet I (2-2-2) F, W, S, (30) Summer.** Fundamentals of ballet technique: principles of the Classical tradition developed from Noverre, Petipa, and Cecchetti. Nonmajors only. Pass/Not Pass Only. May be taken for credit twice.

**31A-B-C Studio Workshop in Ballet I (2-2-2) F, W, S, (31) Summer.** Fundamentals of ballet technique: principles of the Classical tradition developed from Noverre, Petipa, and Cecchetti. Open to Dance majors; nonmajors by audition. May be taken for credit twice.

**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.** Fundamentals of modern dance: principles of modern tradition developed from Graham, Humphrey, and Wigman. Nonmajors only. Pass/Not Pass Only. May be taken for credit twice.

**41A-B-C Studio Workshop in Modern I (2-2-2) F, W, S, (41) Summer.** Fundamentals of modern dance: principles of modern tradition developed from Graham, Humphrey, and Wigman. Open to Dance majors; nonmajors by audition. May be taken for credit twice.

**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.** Fundamentals of jazz: principles of jazz dance and contemporary forms incorporating the personal point of view of the instructor. Nonmajors only. Pass/Not Pass Only. May be taken for credit twice.

**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 taken for credit twice.

**52A-B-C Workshop in Tap I (2-2-2) F, W, S.** Beginning tap: principles of rhythm and basic tap steps. Course sequence may be taken for credit twice.

**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 non-western dance. Dance in the western tradition from prehistory through the Middle Ages. (IV, VII-B)

**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, VII-B)

**90C Dance History IC (4) S.** The history of dance in the western tradition: the twentieth century. Prerequisites: Dance 90A-B. (IV, VII-B)

**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)

## 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.

**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 Body Conditioning and Alignment (2) F, W, S.** Basics of technique emphasizing alignment, breath control, correction of muscular imbalances. Use of the Universal Reformer. Prerequisites: Dance 133A-B-C, 143A-B-C.

**110 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 taken for credit twice.

**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 neo-classical styles and forms. May be taken for credit twice.

**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 methods and theory of teaching dance forms. **125B:** Practicum. The application of theory in the studio. Prerequisites: Dance 133A-B-C and 143A-B-C; upper-division standing. 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-C Costume Design for Dance (4-4-4).** 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.

**132A-B-C Studio Workshop in Ballet II (2-2-2) F, W, S, (132) Summer.** Intermediate ballet: principles of Classical tradition developed from Noverre, Petipa, and Cecchetti. Prerequisites: Dance 31A-B-C or audition. May be taken for credit twice.

**133A-B-C Advanced Studio Workshop in Ballet III (2-2-2) F, W, S, (133) Summer.** Advanced ballet, pointe work, and performance style: principles of the Classical tradition developed from Noverre, Petipa, and Cecchetti. Prerequisites: Dance 132A-B-C or audition. May be taken for credit twice.

**134A-B-C Advanced Studio Workshop in Ballet IV (2-2-2) F, W, S, (134) Summer.** Advanced ballet, pointe work, and performance style: principles of the Classical tradition developed from Noverre, Petipa, and Cecchetti. Prerequisites: Dance 133A-B-C or audition. May be repeated for credit.

**135A-B-C Advanced Studio Workshop in Ballet V (2-2-2) F, W, S.** Advanced ballet, pointe work, and performance style: principles of the Classical tradition developed from Noverre, Petipa, and Cecchetti. Prerequisites: Dance 134A-B-C or audition. May be taken for credit three times.

**137 Repertory (2) F, W, S.** Rehearsal and performance of repertoire from established ballet or modern dance choreographers. Prerequisites: Dance 133A-B-C or 143A-B-C or consent of instructor. May be taken for credit twice.

**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. May be taken for credit twice.

**143A-B-C Advanced Studio Workshop in Modern III (2-2-2) F, W, S, (143) Summer.** Advanced modern dance: principles of modern tradition developed from Graham, Humphrey, and Wigman, incorporating the personal view of the instructor. Prerequisites: Dance 142A-B-C. May be taken for credit twice.

**144A-B-C Advanced Studio Workshop in Modern IV (2-2-2) F, W, S.** Advanced modern dance. In-depth study of styles, performance elements and principles of modern dance developed from Graham, Horton, Humphrey, Wigman, and current influences incorporating the personal view of the instructor. Prerequisite: Dance 143A-B-C or consent of instructor. May be taken for credit three times.

**150A-B-C Studio Workshop in Tap II (2-2-2).** Intermediate tap: principles of beginning tap continued and developed. Prerequisite: Dance 52A-B-C or consent of instructor. 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. Prerequisites: Dance 150 and consent of instructor. May be taken for credit twice.

**152A-B-C Intermediate Studio Workshop in Jazz II (2-2-2) F, W, S.** Intermediate jazz: principles of jazz dance and contemporary forms incorporating the personal views of the instructor. Prerequisites: Dance 51A-B-C. May be taken for credit twice.

**153A-B-C Advanced Studio Workshop in Jazz III (2-2-2) F, W, S.** Advanced jazz: principles of jazz dance and contemporary forms incorporating the personal views of the instructor. Prerequisites: Dance 152A-B-C. May be taken for credit twice.

**154A-B-C Advanced Jazz: Performance Techniques IV (2-2-2) F, W, S.** Advanced jazz emphasizing performance techniques. Prerequisites: Dance 153A-B-C. May be taken for credit twice.

**160 Improvisation (2).** Structured and experiential improvisation to heighten the personal intuitive processes, the kinesthetic sense, spatial and temporal awareness, and to encourage insights into the potential movement resources of the individual for performance and choreography. Course encourages freedom of exploration. May be taken for credit two times. 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.

**165 Choreographic Projects (1 to 4) F, W, S.** Supervised choreographic projects for workshop productions. By audition and approval of faculty. May be taken for credit twice.

**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 taken for credit twice.

**171 Dance Workshop (1 to 4) F, W, S.** Rehearsal and performance in a student-choreographed production. By audition only. May be taken for credit three times.

**172 Master of Fine Arts Concert (1 to 4).** Rehearsal and performance in a graduate student-choreographed production. By audition only. May be taken for credit three times.

**173 Composer-Choreographer Workshop (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. May be taken for credit twice.

**174 UCI Dance Ensemble Performance (1 to 4).** Performance with the UCI Dance Ensemble. Prerequisite: consent of instructor. May be taken for credit twice.

**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 taken for credit twice.

**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.

**178 Performance Laboratory (2) F, W, S.** Rehearsal and performance of student choreographed theatre and concert dance works. Prerequisite: consent of instructor. May be taken for credit six times.

**180A-B-C Laban Studies (4-4-4) F, W, S. 180A:** Elementary Labanotation. **180B:** Intermediate Labanotation. **180C:** Laban movement analysis and motif writing. Prerequisites: Dance 21A; Dance 132A-B-C or consent of instructor.

**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.

**191 History of World Dance (4) F, W, S.** Specified areas from prehistoric to contemporary.

**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) 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. May be repeated for credit.

## GRADUATE

NOTE: Some courses are not offered every year. Please check with the Department advisor.

**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 Science (1 to 4).** Survey of dance science literature and research. Discussion of current developments in the field. Prerequisite: consent of instructor. May be taken for credit two times.

**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

orchestrational analysis; developing kinesthetic rhythmic acuity; enriching musical communicative skills.

**222 Musical Resources (4).** Detailed study of music as it relates to dance. Historical overview of musical form, style, and other elements. Analysis of various affinities between music and dance. Practical applications. Prerequisites: Dance 21A-B.

**225 Seminar in the Teaching of Dance Techniques (4).** Principles and theories of teaching dance techniques. Supervised presentation and teaching of technique class.

**226 Administration and Management: Dance (4).** Introduction to practice and theory of administration of dance companies, dance departments, and dance schools.

**227A, B, C Costume Design for Dance (4, 4, 4) F, W, S.** Overview of basic design elements, draping and drafting techniques, and costume construction.

**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.

**260A-B-C Graduate Lectures in 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 emphasis is on the creation of several works based on movement studies. May be repeated for credit. Formerly Dance 261.

**261A-B-C Graduate Seminar in Choreography (4-4-4) F, W, S.** Graduate work in dance composition emphasizing the individual aesthetic. Assignments in movement discovery, solo and group forms, with the main emphasis on independent work. May be repeated for credit.

**264 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.

**265 Theatre Choreography (4) F, W, S.** Focus is on the choreographer's role in musical and dramatic theatre. Examines the conceptualization of dramatic intent as well as character delineation and development through choreographic movement and design. Course study will draw from literature of musical and dramatic theatre. Prerequisite: consent of instructor. May be taken for credit three times.

**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).** 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. May be taken for credit two times. 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).** Projects may be educational, choreographic, scientific, historical, or philosophical in scope and must have faculty advisor approval. May be taken for credit six times. Formerly Dance 240.

**286 Thesis (4).** Substantial research in a topic approved by the student's graduate committee. Results of the research must be written in approved

thesis style. Prerequisite: consent of department. May be taken for credit six times. 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.

**295 Graduate Colloquium in Dance (1) F, W, S.** Weekly reports and colloquia by faculty, students, and visiting artists on current research in dance. 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

249 Fine Arts Administration; (714) 824-6614

Cameron Harvey, **Department Chair**

### Faculty

Keith Bangs, M.F.A. Yale University, *Lecturer in Drama* (technical production)

Stephen Barker, Ph.D. University of Arizona, *Associate Dean of the School of the Arts, Director of Arts Interdisciplinary, Department Chair (Acting) of Studio Art, and Associate Professor of Drama* (theory, criticism, literature)

Dennis Castellano, M.F.A. University of California, Irvine, *Lecturer in Drama and Head of Music Theatre* (music theatre)

Robert Cohen, D.F.A. Yale University, *Professor of Drama* (acting, directing, dramatic literature)

Myrona Delaney, M.F.A. University of California, Irvine, *Lecturer in Drama* (music theatre, acting)

Clifford Faulkner, M.A. California State University, Long Beach, *Lecturer in Drama* (Design)

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 Emeritus of Drama* (opera and musical theatre, movement, dramatic literature)

Douglas-Scott Goheen, Ph.D. University of Denver; M.F.A. Yale University, *Professor of Drama* (scenery, costume design, and history of design)

Julie Haber, M.F.A. Yale University, *Lecturer in Drama* (stage management)

Cameron Harvey, M.F.A. University of California, Irvine, *Department Chair, Head of Theatre Design, and Professor of Drama* (lighting design, production)

Lilia Illes, B.F.A., University of Southern California, *Lecturer in Drama* (stage management)

Eric Kline, M.A. San Francisco State University, *Lecturer in Drama* (television acting)

Dudley Knight, M.F.A. Yale University, *Department Vice Chair and Associate Professor of Drama* (voice, speech for actors, acting)

Madeline Ann Kozlowski, M.F.A. Brandeis University, *Assistant Professor of Drama* (costume design)

Janet Lewis, M.F.A. University of Oklahoma, *Lecturer in Drama* (costume design)

Annie Loui, *Assistant Professor of Drama* (movement)

David McDonald, Ph.D. Stanford University, M.F.A. Yale University, *Associate Professor of Drama* (critical theory, dramatic literature, and playwriting)

Martha McFarland, B.A. San Francisco State University, *Lecturer in Drama* (auditions)

Joan Melton, Ph.D. University of North Carolina, *Lecturer in Drama* (voice)

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, *Associate Professor of Drama and Head of Acting* (acting, directing)

Richard Triplett, Otis Art Institute, *Professor Emeritus of Drama* (scenery and costume design, history of design)

Christopher Villa, *Lecturer in Drama* (stage combat)

Maura Vincent, M.F.A. University of California, Irvine, *Lecturer in Drama* (acting)

Robert Weimann, Ph.D. Humboldt University (Germany), *Acting Professor of Drama* (theory, criticism, literature)

Shigeru Yaji, M.F.A. California State University Long Beach, *Lecturer in Drama* (costume design)

The program leading to the Bachelor of Arts in Drama combines broad liberal study and comprehensive training in several subdisciplines of drama. Each Drama major studies and practices in each of several mutually related areas of the theatre: performance, literature, history, criticism, design and stage management, and production. The curriculum is structured to relate studio practices, technical resources, and production techniques to the development of dramatic literature and current critical theory.

The program is designed for students who, while not necessarily planning to make the theatre their vocation, have a serious interest in the literature, theory, and practice of drama, as well as for students preparing to work professionally in the theatre, often after more specialized training at the graduate level.

### CAREERS FOR THE DRAMA MAJOR

A degree in Drama may or may not lead to professional employment in theatre or film.

Graduates in Drama at UCI have performed in Broadway plays, regional and summer theatres, and in films and television. They serve as artistic directors, designers, art directors, business managers, and performers at more than 100 theatre companies, and as faculty at more than 75 institutions of higher learning.

Not all Drama students become professional theatre artists. Many embark upon careers in law, business, arts management, advertising, and teaching; others pursue further study at UCI or elsewhere.

### REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57–61.

**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); one year in the development of theatre (Drama 120A, B, C); two upper-division courses in dramatic literature; three 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.

Students are required to take Drama 40A, B, C in their sophomore year, after completion of the lower-division writing requirement.



Students entering the Department as freshmen must complete Drama 50A, B, C by the end of their junior year. All other students must complete these courses within one year of entering the major.

#### Sample Program for Freshmen

Fall	Winter	Spring
Drama 30A	Drama 30B	Drama 30C
Drama 50	Drama 50 or 10	Drama 50 or 10
Drama 101 (2 units)	Drama 101 (2 units)	English and Comp.
English and Comp.	English and Comp.	Lit. WR39C
Lit. WR39A	Lit. WR39B	Elective

#### Departmental Requirements for the Minor

Drama 10 (Introduction to Production Theory); Drama 30A-B-C (Acting); Drama 40A, B, C (Development of Drama); seven upper-division courses in drama, each of which must be taken at UCI, including Drama 120A, B, C (Development of Theatre) and 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, or Design and Stage Management.

A graduate emphasis in Feminist Studies also is available. Refer to the Women's Studies section of the *Catalogue* for information.

#### Admission

Applicants for admission to the degree program must meet the general requirements for admission to graduate study and hold a B.A., B.F.A., or higher degree.

Applicants must submit dossiers of biographical information and theatrical experience, together with photographs, essays, reviews, production books, and portfolios, as appropriate.

Normally an audition is required for all applicants who intend to follow the curriculum in Acting. UCI coordinates its auditions with the University/Resident Theatre Association (U/RTA), and conducts auditions, both for U/RTA finalists and UCI applicants, in New York, Chicago, and Irvine during February. Interviews for applicants in Directing and in Design and Stage Management also are required.

#### General Degree Requirements

Normally three years of residence is required. Each candidate must enroll for three courses each quarter for nine quarters, exclusive of summer sessions.

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 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 three 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); three courses in development of theatre (Drama 120A, B, C)—faculty program head may approve substitutions depending on student's prior academic experience; two seminars in dramatic literature, performance theory, criticism, history of theatre, or contemporary theatre (Drama 220-223, 225, or 230); six graduate projects, of which two may be professional internships (Drama 240 or 295).

#### Design and Stage Management

Nine graduate studios in design/stage management, one of which is the thesis (Drama 255); seven courses in graduate projects, two of which may be a professional internship (Drama 240, 295); two elective courses; three courses in development of theatre (Drama 120A, B, C)—faculty head may approve substitutions depending on student's prior academic experience; two courses in production techniques (Drama 150-162, 167-171); one course in conceptualization and collaboration (Drama 245, must be taken the first quarter in residence); one seminar in script analysis and research (Drama 235); two courses in dramatic literature, performance theory, criticism, contemporary theatre, or history of music theatre (Drama 220, 221, 223, 230, or 248).

#### Directing

Nine graduate studios in directing (Drama 211); three courses in development of theatre (Drama 120A, B, C)—faculty program head may approve substitutions depending on student's prior academic experience; two courses in acting (Drama 130A-B, or 135 as qualified); one seminar in script analysis and research (Drama

235); one course in conceptualization and collaboration (Drama 245); two seminars in dramatic literature, performance theory, criticism, theatre history (Drama 220–223, 248); seven projects, of which one is the thesis, one is a project in theatre production, one may be a professional internship, and three must be directed (non-thesis) productions; two or three electives.

## 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 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 10 plays and supplementary critical material are read each quarter. **40A:** Greek Drama through Shakespeare. Readings from Aeschylus, Sophocles, Euripides, Aristophanes, Marlowe, Shakespeare, and the anonymous playwrights of the medieval theatre. **40B:** Restoration Drama through Ibsen. Readings from Neoclassic, Romantic, and Naturalistic European playwrights in the eighteenth and nineteenth centuries. Molière, Racine, Congreve, Goethe, Ibsen, and Chekhov are included. **40C:** Contemporary Drama. Post Naturalistic theatre: Expressionism, Epic Theatre, Theatre of the Absurd, and Contemporary American Theatre. Among the playwrights studied are Stein, Shaw, Pirandello, Ionesco, Beckett, Williams, Brecht, Weiss, Albee, Churchill, and Duras. Same as English and Comparative Literature CL 40A, B, C. (IV, VII-B)

**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 production and construction of designed work as well as its applied execution during performance. Prerequisite: consent of instructor. May be taken for credit 12 times for a maximum of 24 units provided productions change.

**101A Theatre Production: Costume (2 to 6) F, W, S.** Pass/Not Pass Only.

**101B Theatre Production: Scenic (2 to 6) F, W, S.** Pass/Not Pass Only.

**101C Theatre Production: Lighting (2 to 6) F, W, S.** Pass/Not Pass Only.

**101D Theatre Production: Stage Management (2 to 8) F, W, S**

**101E Theatre Production: Audio (2 to 6) F, W, S.** Pass/Not Pass Only.

**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, C Development of Theatre (4, 4, 4).** A one-year lecture course concentrating on the development of world theatre from a visual point of view, from the earliest storytelling rituals through international stage development to contemporary theatrical forms. Prerequisite or corequisite: Drama 40 A, B, C.

**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. Prerequisites: Drama 32 and consent of instructor. May be repeated for credit as topics vary.

**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 playwrighting 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 playwrighting.

**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.** Discusses the composers, librettists, directors, choreographers, and performers in the American musical theatre. **148A:** Early 1700–1940s: types—ballad opera, minstrels, vaudeville, burlesque, operetta, revues, early musical comedy. **148B:** 1940s–present: types—musical comedy, the concept musical, the Broadway opera. Concurrent with Drama 248A-B.

**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 troupeing. 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.

**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.

**160 Light Plotting Techniques (4).** A study of the development of theatrical lighting plots from initial conceptualization through final documentation. Areas of emphasis include script analysis, visual approaches, equipment selection and compositional qualities of light. Prerequisite: Drama 50C.

**161 Stage Lighting Graphics (4) S.** A studio course in the various graphic methods employed by lighting designers in the theatre. Investigations will include manual and computer-aided techniques. Prerequisite: Drama 50C.

**162 History of Stage Lighting (4) W.** A historical study of lighting design methods, techniques, and innovation. Areas of emphasis include the development of light sources, equipment, and design styles.

**163 Introduction to Stage Management (4) F.** A basic study of theatrical, dance, and opera stage management practices, forms, and methods, from first script reading to closing night. Opportunity to observe professionals at work in regional and touring situations as available.

**165A Beginning Music Theatre Workshop (4).** A workshop in audition technique and song interpretation. May be taken for credit six times.

**165B Advanced Music Theatre Workshop (4).** Work on technique and interpretation continue for the more advanced student. Emphasizes performance skills and scene work. Prerequisites: Drama 165A and audition. May be taken for credit six times. Formerly Drama 165A.

**165N New York Music Theatre Workshop (4).** Music theatre workshop specifically for the New York Satellite Program. Prerequisite: by audition. May be taken for credit six times. Formerly Drama 165B.

**167 A, B Fabric Modification Techniques (4, 4).** Exploration of various dying, printing, painting, and texture modification techniques. Prerequisite: Drama 50A.

**168 Theatrical Mask Techniques (4).** Design and construction of theatrical masks including paper mache, leather, plastics, and latex. Projects employ traditional and contemporary techniques. Prerequisites: Drama 50A.

**169 Costume Rendering Techniques (4).** Development of costume rendering skills and techniques. Explores collage, pastel, and ink and emphasizes watercolor. Prerequisite: Drama 50A.

**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.

**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.

**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.

**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, cloakwork; staff fighting—Eastern and Western.

**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 audition technique and scene study in all time periods and styles of music theatre. Private weekly lessons in advanced vocal technique are also provided through the labs. Limited to graduate Drama students only. May be taken for credit nine times.

**217 Graduate Music Theatre Acting (4) W.** An acting studio using contemporary, non-musical dramatic material for graduate students in the music theatre program. Limited to graduate Drama students only. May be taken for credit three times.

**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.

**226 Seminar on the Book Musical (4) W.** A critical analysis of the words and music of book musicals from early musical comedy through contemporary Broadway opera. Prerequisites: Drama 248A-B; graduate students only.

**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.

**248A-B History of Music Theatre (4-4) F, W.** Discusses the composers, librettists, directors, choreographers and performers in the American musical theatre. **248A:** Early 1700–1940s: types—ballad opera, minstrelsy, vaudeville, burlesque, operetta, revues, early musical comedy. **248B:** 1940s–present: types—musical comedy, the concept musical, the Broadway opera. Must be taken in sequence. Limited to graduate students only. Concurrent with Drama 148A-B.

**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.

## DEPARTMENT OF MUSIC

292 Music Building; (714) 824-6615

Margaret Murata, **Department Chair (Acting)**

### Faculty

Haroutune Bedelian, Associate of the Royal Academy of Music, London, *Associate Professor of Music* (violin, chamber ensembles)

Rae Linda Brown, Ph.D. Yale University, *Associate Professor of Music* (history, American musics)

Lisa Cherry, B.A. California State University Long Beach, *Lecturer in Music* (French horn)

Thomas Cockrell, D.M.A. State University of New York at Stony Brook, *Assistant Professor of Music and Director of the University Orchestra* (conducting, analysis)

Steven Crum, *Lecturer in Music* (jazz ensemble)

Christina Dahlin, M.F.A. University of California, Irvine, *Lecturer in Music* (voice, opera)

Jonathon Davis, M.M. The Julliard School of Music, *Lecturer in Music* (oboe)

Russell Dicey, B.F.A. California Institute of the Arts, *Lecturer in Music* (French horn)

Theresa Dimond, D.M.A. University of Southern California, *Lecturer in Music* (percussion)

Bernard Gilmore, D.M.A. Stanford University, *Professor of Music* (composition, theory)

Patrick Goesser, M.A. University of Iowa, *Lecturer in Music* (voice)

Frederick Greene, M.Mus. Ed. University of Southern California, *Lecturer in Music* (tuba)

Michelle Gregó, M.M. University of Southern California, *Lecturer in Music* (bassoon)

Lorna Griffitt, D.M. Indiana University, *Lecturer in Music* (piano)

Robert Hickok, B.Mus. Yale University, *Professor Emeritus of Music* (choral conducting)

Nina Hinson, M.M. University of Southern California, *Lecturer in Music* (voice, opera, vocal pedagogy)

William C. Holmes, Ph.D. Columbia University, *Professor Emeritus of Music* (history, opera)

Joseph B. Huszti, M.Mus. Northwestern University, *Professor of Music and Director of Voice and Choral Music* (conducting, choral ensembles, voice)

Rosemary Hyler-Ritter, B.Mus. Catholic University of America, *Lecturer in Music* (accompanying, piano, vocal coaching)

Larry Kaplan, Performance Certificate, Academie International in France, *Lecturer in Music* (flute)

Laura Kuennen-Poper, M.M. Eastman School of Music, *Lecturer in Music* (viola)

Alfred Lang, M.F.A. University of California, Irvine, *Assistant Professor of Music* (trumpet, rock music)

Margaret Murata, Ph.D. University of Chicago, *Department Chair and Professor of Music* (history, theory)

James Newton, B.M. California State University, Los Angeles, *Professor of Music* (jazz studies, flute, composition)

Barbara Northcutt, B.Mus. University of Southern California, *Lecturer in Music* (oboe)

Peter S. Odegard, Ph.D. University of California, Berkeley, *Professor Emeritus of Music* (theory, composition)

Leo Potts, M.A. California State University, Long Beach, *Lecturer in Music* (saxophone)

Ronald W. Sainio, M.Mus. University of Wisconsin, *Lecturer in Music* (basic voice, choral conducting, theory)

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, American musics)

Nina Scolnik, B.Mus. Oberlin Conservatory, Performance Diploma, The Julliard School, *Lecturer in Music* (piano)

H. Colin Slim, Ph.D. Harvard University, *Professor Emeritus of Music* (history)

Gayle Smith, B.A. University of California, Los Angeles, Associate of the Royal Academy of Music (London), *Lecturer in Music* (cello)

Ricardo Soto, D.M.A. University of Southern California, *Lecturer in Music* (choral ensembles)

David Stetson, B.M. University of Southern California, *Lecturer in Music* (trombone)

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) and the Master of Fine Arts degree in Music. The minor in Music is unavailable until further notice.

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, for a maximum of 12 quarters, 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 arts, or in other academic disciplines. Students receive two years of instrumental or vocal instruction and participate at the same time in two years of ensemble or repertory classes. Students also complete a senior project in an area of particular interest (a historical project, a composition, or a lecture/performance).

Music scholarships are offered to promising undergraduate performers. Awarding of scholarships is generally based on the preadmission auditions which are held in February.

The University's Education Abroad Program offers students the opportunity to study abroad during 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 Department of Education is available for students interested in obtaining a California Teaching Credential.

The **Master of Fine Arts (M.F.A.)** degree program in Music emphasizes composition, choral conducting, voice performance, piano performance, and instrumental performance.

## PERFORMANCE OPPORTUNITIES

### Choral/Vocal

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, and Men's Chorus 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.

### Instrumental

The UCI Symphony Orchestra offers participants an opportunity to explore the great masterworks of the standard orchestral repertory. 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*. Johann Strauss Jr.'s *Die Fledermaus* was presented in conjunction with the Departments of Drama and Dance.

Additional student performance opportunities are available with three bands: the Wind Ensemble performs great works from the concert band literature; the Jazz Ensemble is a standard 18-piece big band; and the UCI Band plays at athletic events, including the men's basketball season home games.

## 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 applicants for admission are required to pass an audition in their principal performing medium and will receive information concerning the mandatory audition approximately 60 days following the close of the application period.

Freshmen students wishing to enter either of the baccalaureate degree programs in Music must demonstrate appropriate performance proficiency and 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 repertory 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**—ability to perform solo literature; 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 Prelude and Fugue from Bach's *Well-Tempered Clavier*, the first movement of a classical sonata of the difficulty of Beethoven's *Pathétique*, and a composition from the Romantic period of the level of a Chopin Impromptu.

**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 repertory from the seventeenth century to the present with a demonstrable knowledge of the sonata literature for the particular instrument.

**Percussion students**—mastery of rudimentary snare drum techniques to include open and closed rolls, flams, ruffs, and drags; familiarity with mallet percussion instruments (including bells, xylophone, and marimba) and ability to play rolls on tympani; knowledge of tuning techniques and basic rhythmic reading, major and minor scales, and basic note reading skills.

**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 repertory of a difficulty comparable to the symphonies of Haydn, Mozart, Beethoven, and Schubert as well as demonstrable knowledge of the sonata and/or chamber music 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 repertory; **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 repertory (e.g., Brahms sonata, or concertos by Handel, Hoffmeister, Bartók, or Telemann); **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 repertory (e.g., Lalo, Saint-Saëns, Dvůrák, Haydn, Boccherini); **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 repertory.

**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 repertory.

### Course Groups by Major

Piano major	
Private Lesson	Music 165
Solo Performance Class	Music 175
Ensemble	Music 176
Voice major	
Private Lesson	Music 168
Solo Performance Class	Music 63, 163
Ensemble	Music 162
Guitar/Lute major	
Private Lesson	Music 190
Solo Performance Class	Music 174
Ensemble	Music 176
String major	
Private Lesson	Music 166
Solo Performance Class	Music 176 or 194
Ensemble	Music 160
Woodwind/Brass major	
Private Lesson	Music 167
Solo Performance Class	Music 176
Ensemble	Music 160, 161, or 178
Percussion major	
Private Lesson	Music 190
Solo Performance Class	Music 177
Ensemble	Music 160, 161, or 178

### REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57–61.

**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 40B-C-D); one quarter of tonal counterpoint (Music 43) or one quarter of history of jazz (Music 78A or 78B); attainment of a passing score on the Piano Sight-Reading Examination, to be taken no later than the first quarter of the junior year.

**Bachelor of Arts Degree:** Satisfactory completion of the Core requirements; one quarter of analysis (Music 155A); one quarter upper-division topics course chosen from the Music 140–145 series or Music 155B; two years of instrumental or vocal instruction (12 units maximum, selected from Music 65–68, 168–170; two years of ensemble or repertory classes as assigned by the Department (12 units selected from Music 63, 160–164, 171–176, 178, 179, 194, or 197). 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.

All students are required to complete one of the following as a Senior Project: (1) a lecture of approximately 20 minutes in length on a musical subject presented to students, faculty, and guests, which can be a revision of a paper or project prepared for a course; (2) a two- to three-minute composition in a twentieth-century idiom, written under faculty supervision; or (3) a thesis on a musical subject of at least 15 typed, double-spaced pages, which can be based on material taken from a course other than Music 155B. Proposed projects must be approved by the B.A. advisor by the end of the fall quarter of the year in which graduation is expected. Upon approval of the project proposal and with faculty supervision, a student may take Music 199 to research and write the thesis.



**Sample Program — B.A.**

FALL	WINTER	SPRING
<b>Freshman</b>		
Music 5A	Music 5B	Music 5C
Music 30A	Music 30B	Music 30C
Lessons	Lessons	Lessons
Ensemble	Ensemble	Ensemble
English and Comp. Lit. WR39A	Music 10 (Elective) English and Comp. Lit. WR39B	Music 10 (Elective) English and Comp. Lit. WR39C
<b>Sophomore</b>		
Music 15A	Music 15B	Music 15C
Music 35A	Music 35B	Music 43 or 78
Lessons	Lessons	Lessons
Ensemble	Ensemble	Ensemble
Breadth VI	Breadth VI	Breadth VI
<b>Junior</b>		
Music 40B	Music 40C	Music 40D
Breadth III	Breadth III	Breadth III
Breadth V	Breadth V	Breadth V
Breadth VI	Elective	Elective
<b>Senior</b>		
Music 155A	Music 140-145, or 155B	Breadth II
Breadth II		Elective
Breadth VII	Breadth II	Elective
Elective	Breadth VII Elective	

**Bachelor of Music Degree:** Satisfactory completion of the Core requirements; one quarter of analysis (Music 155A); one quarter upper-division topics course chosen from the Music 140-145 series or Music 155B; instrumental or vocal instruction each quarter of residence (Music 165-170); senior recital (Music 192S); completion of the following courses each quarter of residence and according to the approved Bachelor of Music specialization:

*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 each quarter of residence); six quarters of ensemble performance (three quarters of Music 76P and three quarters of Music 176), for any quarters of which may be substituted Music 160P, 161P, 166P, 178P, 179, or 194 with the consent of the instructor; and three quarters of choral/vocal accompaniment, to be chosen from Music 162P, 164P, or 197; transfer students in piano distribute this requirement in a 2:1 ratio over quarters of residence.

*Voice:* chorus (Music 162) and vocal performance (Music 63 or 163). With written 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, with written 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).

**Sample Program — B.Mus.**

FALL	WINTER	SPRING
<b>Freshman</b>		
Music 5A	Music 5B	Music 5C
Music 30A	Music 30B	Music 30C
Major group <sup>1</sup>	Major group <sup>1</sup>	Major group <sup>1</sup>
English and Comp. Lit. WR39A	Music 10 (Elective) English and Comp. Lit. WR39B	Music 10 (Elective) English and Comp. Lit. WR39C
<b>Sophomore</b>		
Music 15A	Music 15B	Music 15C
Music 35A	Music 35B	Music 43 or 78
Major group <sup>1</sup>	Major group <sup>1</sup>	Major group <sup>1</sup>
Breadth VI	Breadth VI	Breadth VI
<b>Junior</b>		
Music 40B	Music 40C	Music 40D
Major group <sup>1</sup>	Major group <sup>1</sup>	Major group <sup>1</sup>
Breadth VI	Music 192J	Upper-division writing
Breadth V	Breadth III	Breadth V
	Breadth V	
<b>Senior</b>		
Music 155A	Music 140-145 or 155B	Breadth III
Major group <sup>1</sup>	Major group <sup>1</sup>	Major group <sup>1</sup>
Breadth II	Breadth II	Music 192S
Breadth VII	Breadth VII	Breadth II
		Breadth III

<sup>1</sup> Three courses taken concurrently that are determined by the student's major. See Course Groups by Major chart.

**Sample Program — Special String Performance B.Mus.**

FALL	WINTER	SPRING
<b>Freshman</b>		
Music 5A	Music 5B	Music 5C
Music 30A	Music 30B	Music 30C
Music 77	Music 77	Music 77
Music 160	Music 160	Music 160
English and Comp. Lit. WR 39A	Music 10 (Elective) English and Comp. Lit. WR 39B	Music 10 (Elective) English and Comp. Lit. WR 39C
<b>Sophomore</b>		
Music 15A	Music 15B	Music 15C
Music 35A	Music 35B	Music 43 or 78
Music 77	Music 77	Music 77
Music 160	Music 160	Music 160
Arts Course	Arts Course	Arts Course
Breadth VI	Breadth VI	Breadth VI
<b>Junior</b>		
Music 40B	Music 40C	Music 40D
Music 177	Music 177	Music 177
Music 160	Music 160	Music 160
Music 194	Music 194	Music 194
Breadth VI	Music 192J	Breadth III
Breadth V	Breadth III	Breadth V
	Breadth V	
<b>Senior</b>		
Music 177	Music 177	Music 177
Music 160	Music 160	Music 160
Music 194	Music 194	Music 194
Music Elective	English and Comp.	Music 196
Breadth II	Lit. WR 139	Breadth II
Breadth VII	Breadth II	Breadth VII
	Breadth III	

## MASTER OF FINE ARTS PROGRAM

### Degree Offered

M.F.A. in Music, with emphasis in composition, choral conducting, vocal performance, piano performance, and instrumental performance.

### Admission

Applications for admission to the degree program are should be submitted by March 1 for the following fall quarter. Applicants 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, Spanish, or Latin.

Applicants must also submit an eight- to ten-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 by March 1. 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 applicants 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). The examination will be administered in late March for all applicants who live within a 100-mile radius of UCI; all other applicants will be sent information concerning a proctored examination. In some cases, students who do not demonstrate appropriate proficiency in some area may be considered for admission. If admitted, these students will be required to make up any deficiency by the end of the first year of residency.

### General Degree Requirements

Normally, two years of residence are required. Each candidate must enroll for at least 12 units each quarter (normally consisting of three courses) for six quarters, exclusive of summer sessions. Reading knowledge of French, German, Italian, Spanish, or Latin must be demonstrated by passing a written examination administered through the Department of Music, or by passing the appropriate language course (level 2A) for one quarter. This course must be passed with a grade of B or better to fulfill the foreign language requirement. All graduate students must pass the foreign language requirement prior to the comprehensive examination.

Comprehensive examinations are taken after the fourth quarter in residence as a prerequisite to candidacy for the M.F.A. degree. A student who fails the comprehensive examination may reschedule it 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:

**Choral Conducting:** 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); one course in directed reading (Music 250); two quarters of graduate projects (Music 240); four electives; participation in performance as assigned by the Department of Music each quarter of residence; preparation of a thesis project in performance, supported by a written essay.

**Composition:** 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 composition (Music 212); two 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.

**Instrumental Performance:** two courses in bibliography (Music 200); one course in analysis (Music 201); one course in history (Music 220); 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); two 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.

**Piano Performance:** two courses in bibliography (Music 200); one course in analysis (Music 201); one course in history (Music 220); six courses in graduate studio instrumental literature (Music 211); two 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.

**Vocal Performance:** two courses in bibliography (Music 200); one course in analysis (Music 201); one course in history (Music 220); one quarter of tutorials (Music 190); two quarters of tutorials (Music 191); five courses in graduate studio vocal literature (Music 210); two courses in graduate projects (Music 240); one course in directed reading (Music 250); four electives; participation in performance as assigned by the Department of Music each quarter of residence; preparation of a thesis project in performance, supported by a written essay.

## 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. Corequisite: Music 30A-B-C. 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.

**7 Gospel Choir (2).** American spirituals and gospels. Approach is one of cultural authenticity rather than "musically straight." Several performances are given throughout the year. May be repeated for credit. Pass/Not Pass Only. Formerly Comparative Culture 130R-S-T.

**9 History of Rock (4) S.** Explores the development of rock music—its history and stylistic development from a political, sociological, and musical perspective.

**10 Piano for Majors (2) F, W, S.** For music majors with little or no piano experience. Provides the necessary background for realizing keyboard exercises required in the theory and harmony courses, and develops skills to play and sight-read simple music from different periods. Pass/Not Pass only. May be taken for credit three times.

**14A-B-C European and American Music: 1700—Twentieth Century (4-4-4) F, W, S.** Survey of European and American music from the Baroque period through the twentieth century. **14A:** Baroque and Classical music with adequate attention given to the Medieval and Renaissance periods. **14B:** The nineteenth and twentieth centuries. **14C:** Selected topics in American music. (IV)

**15A-B-C Musicianship 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.

**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 bases. Prerequisite: Music 25 or equivalent.

**35A-B Theory II: Chromatic Harmony (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. Formerly Music 35A-B-C.

**40B-C History of European Music to Wagner (4-4) F, W.** 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. **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. (IV)

**40D Twentieth-Century Music (4).** Survey of principal composers, movements, and compositional techniques of Western art music of the modern era. Prerequisites: Music 15B, 35B, 40B, and 40C, or equivalent. (IV)

**41 Great Composers (4).** Study of the works of an important composer with emphasis on their significance in historical and social contexts. Composers selected represent a wide variety of historical periods, nationalities, and stylistic orientations. Primarily for non-music majors; majors may enroll with permission. May be taken for credit two times as topics vary.

**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.

**76P Chamber Ensembles (2) F, W, S.** Chamber ensembles for sophomore piano majors only. Meets with Music 176. May be taken for credit three times.

**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.

**78A, B History of Jazz (4, 4) F, W. 78A:** Development of jazz from its African and African-American folk origins through blues, early jazz and the swing era. **78B:** Continuation of the above survey, concentrating on bebop, "cool" jazz, and fusion. (VII-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)**

**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 hierarchic 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 repertory 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.

**160P University Orchestra: Keyboard (1 to 2) F, W, S.** Participation in University Orchestra for keyboard players (harpsichord, piano, celestra, organ), depending on repertory. Prerequisites: Music 15C and Music 165 or equivalent; audition and consent of instructor. May be repeated for credit.

**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.

**161P Wind Ensemble: Keyboard (1 to 2) F, W, S.** Participation in University Ensemble for keyboard players (piano, synthesizer, celesta, organ), depending on repertory. Prerequisites: Music 15C and Music 165 or equivalent; audition and consent of instructor. 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.

**164P Opera Workshop: Rehearsal (2) F, W, S.** Training in repetiteur techniques and operatic repertory for keyboard players. Prerequisites: Music 5C and 30C or equivalent; consent of instructor. May be taken for credit six times.

**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.

**166P String Accompaniment (2) F, W, S.** Chamber ensemble experience with the solo string repertory for keyboard players, participation in the weekly string master class, performance in public recitals. Prerequisites: Music 5C and 30C or equivalent; audition and consent of instructor. May be taken for credit three times.

**167 Advanced Study for Wind Instruments (2) F, W, S.** Private weekly lessons. Open to Music majors 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.

**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.

**178I Beginning Jazz Improvisation (2) F, W.** Develops the student's basic understanding of the fundamentals of jazz improvisation. Basic harmonic patterns, blues, modality, and simpler song forms are covered. May be taken for credit twice.

**178P Jazz Ensemble: Keyboard (1 to 2) F, W, S.** Participation in Jazz Ensemble for keyboard players (harpsichord, piano, celestra, organ), depending on repertory. Prerequisites: audition and consent of instructor. May be taken for credit three times.

**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.

**192P Senior Project (0) F, W, S.** Senior project for music majors in the B.A. program. 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.

**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.

**199 Independent Study (2) F, W, S.** Research, writing, or composition work, under the guidance of a faculty member, normally undertaken in conjunction with preparation of the B.A. Senior Project. Prerequisite: consent of instructor. May be taken for credit two times.

## 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.

**210 Topic Varies: Vocal or Choral Literature (4) F, W, S.** Includes studies in vocal or choral literature, vocal pedagogy, and diction and performance. May be taken for credit six times.

**210R M.F.A. Vocal/Choral Recital (0) F, W, S.** Performance of recital. Satisfactory/Unsatisfactory only. May be repeated for credit.

**211 Graduate Studio: Instrumental Literature (4) F, W, S.** Contents vary according to the student's major instrument. The core of this course is intensive private instruction and study of the various instrumental literatures. May be taken for credit six times.

**211R M.F.A. Instrumental Recital (0) F, W, S.** Performance of recital. Satisfactory/Unsatisfactory only. May be taken two times.

**212 Graduate Studio: Composition (4-4-4) F, W, S.** Intensive work in composition geared to each student's level of competence.

**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) F, W, S.** Substantial projects in performance, conducting, or composition (other than those specifically required for the degree), accompanied by a summary paper. May be repeated for credit.

**250 Directed Reading (4).** Individual research projects, resulting in the writing of a substantial paper pertaining to the principal area of concentration. May be repeated for credit.

**399 University Teaching (4-4-4) F, W, S.** Limited to Teaching Assistants.

## DEPARTMENT OF STUDIO ART

176 Sculpture Studio; (714) 824-6648

Stephen Barker, **Department Chair (Acting)**

### Faculty

Stephen Barker, Ph.D. University of Arizona, *Associate Dean of the School of the Arts, Director of Arts Interdisciplinary, Department Chair (Acting) of Studio Art, and Associate Professor of Drama* (theory, criticism, literature)

Ed Bereal, Chouinard Art Institute, *Senior Lecturer Emeritus in Studio Art*

Tony DeLap, Claremont Graduate School, *Professor Emeritus of Studio Art*

Ulysses Jenkins, M.F.A. Otis Parsons Art Institute, *Assistant Professor of Studio Art* (video)

John Paul Jones, M.F.A. State University of Iowa, *Professor Emeritus of Studio Art*

Craig Kauffman, M.F.A. University of California, Los Angeles, *Professor Emeritus of Studio Art*

Catherine Lord, M.F.A. State University of New York, Buffalo (Visual Studies Workshop), *Professor of Studio Art* (critical theory, feminism, photography)

Daniel Martinez, B.F.A. California Institute of the Arts, *Assistant Professor of Studio Art* (public art, sculpture)

Yong Soon Min, M.F.A. University of California, Berkeley, *Assistant Professor of Studio Art* (sculpture)

Gifford C. Myers, M.F.A. University of California, Irvine, *Associate Professor of Studio Art* (ceramic sculpture)

Connie Samaras, M.F.A. Eastern Michigan University, *Associate Professor of Studio Art* (photography, media theory, contemporary art issues)

John White, M.F.A. Otis Parsons Art Institute, *Lecturer in Studio Art* (performance)

Pat Ward Williams, M.F.A. Maryland Institute College of Art, *Associate Professor of Studio Art* (photography, installation)

### Visiting Lecturers

Judie Bamber, B.F.A. California Institute of the Arts, *Lecturer in Studio Art* (painting and drawing)

Eva Cockcroft, M.A. Rutgers University, *Lecturer in Studio Art* (contemporary art issues)

Steven Criqui, B.A. University of California, San Diego, *Lecturer in Studio Art* (painting)

Betty Lee, M.F.A. California Institute of the Arts, *Lecturer in Studio Art* (photography)

Catherine Opie, M.F.A. California Institute of the Arts, *Lecturer in Studio Art* (photography)

Joseph Santarromano, M.F.A. California Institute of the Arts, *Lecturer in Studio Art* (basic painting and video)

Lisa Schoyer, M.F.A. California Institute of the Arts, *Lecturer in Studio Art* (sculpture and installation art)

Anne Walsh, M.F.A. California Institute of the Arts, *Lecturer in Studio Art* (visual fundamentals, studio methods)

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, photography, digital imaging, and video, in addition to emphasizing cultural studies in relation to contemporary practice. Visiting artists and theorists who teach on a quarterly basis, or who make shorter guest appearances, are an integral part of the program.

The University's Education Abroad Program offers students the opportunity to study abroad. 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 Art Gallery exhibitions provide diverse career models. Some graduates go on to careers as exhibiting artists or teachers; others work in arts-related activities in museums, galleries, and artists' organizations. A bachelor's degree in Studio Art is usually required as preparation for graduate-level study in studio art.

## REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57–61.

**School Requirements:** None.

### Departmental Requirements for the Major

Studio Art 1A-B-C (taken the first year in residence); Studio Art 10A-B-C; Art History 40A, 40B, 40C or 42A, 42B, 42C; five lower-division courses in at least three different media (Studio Art 20–99); upper-division courses totaling 48 units as follows: three intermediate-level courses with no more than two in one area (Studio Art 102–115); six advanced or project courses (Studio Art 100, 101, 130–195, 199); three issues courses (Studio Art 116–129); Senior Thesis Exhibition (Studio Art 198).

### Sample Program for Freshmen

Fall	Winter	Spring
Studio Art 1A	Studio Art 1B	Studio Art 1C
Art History 40A/42A	Art History 40B/42B	Art History 40C/42C
English and Comp. Lit. WR39A	Elective English and Comp. Lit. WR39B	Elective English and Comp. Lit. WR39C

### Departmental Requirements for the Minor

Studio Art 1A-B-C; Studio Art 10A-B-C; three lower-division studio classes in three media (Studio Art 20–99); five upper-division courses divided as follows: one from intermediate-level courses (Studio Art 102–115) with no repetition of any course; one from issues courses (Studio Art 116–129); one from advanced or project courses (Studio Art 100, 101, 130–195, 199); plus two additional upper-division courses selected from any of these groups.

## MASTER OF FINE ARTS PROGRAM

### Degree Offered

M.F.A. in Studio Art.

A graduate emphasis in Feminist Studies also is available. Refer to the Women's Studies section of the *Catalogue* for information.

### 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 Art Gallery.

The program of visiting artists and lecturers is an integral part of the graduate experience. Recent visitors have included Hung Liu, Margo Machida, Larry Johnson, Millie Wilson, John Greyson, Guillermo Gomez-Peña, Trinh T. Minh-ha, Emily Cheng, Coco Fusco, Carrie Mae Weems, Deborah Bright, May Sun, Li Huai, David Avalos, Jon O'Brien, Douglas Crimp, Hachivi Edgar Heap of Birds, Lari Pittman, Sunil Gupta, Barbara Kruger, Connie

Hatch, Nancy Buchanan, O. Fumilayo Makarah, Megan Williams, Fred Wilson, Karen Finely, and Amalia Mesa-Bains.

Individual studio space is assigned by the Department Chair. Facilities support wood and metal work, ceramics, video, photography, computer imaging, sound, painting (including mural painting), and sculpture.

### 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, have completed one year of twentieth-century art history (students who have not completed this will be required to do so as part of their graduate studies), and submit by February 15 a portfolio of their creative work of a maximum of 20 slides, on a #80 Kodak Carousel tray, of their most recent work, or video tape (VHS; no more than 10 minutes, cued up). A short incisive statement about the work is required. Normally, anyone who has earned an M.F.A. degree in Studio Art will not be considered for admission into the program.

### 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. Students are encouraged to take courses in other relevant disciplines, e.g., women's studies, film studies, comparative culture, and critical theory. Electives may be taken in any discipline. The 72 units will normally be made up in the following manner:

**First Year:** three courses in Issues in Contemporary Art (Studio Art 215, 220); three courses in Graduate Critique (Studio Art 230); 12 units in graduate projects (Studio Art 240).

**Second Year:** two courses in Issues in Contemporary Art (Studio Art 215, 220); two courses in Graduate Critique (Studio Art 230); one additional course in Studio Art 220 or Studio Art 230; twelve units in graduate projects (Studio Art 240); one course in thesis (Studio Art 260).

## Courses in Studio Art

### LOWER-DIVISION

**1A-B-C Topics in Visual Culture: Foundation Projects (4-4-4).** Approaches to postwar art and culture. Solving visual problems and developing understanding of how gender, sexuality, race, nationality influence contemporary cultures. Examines individual's relation to being an artist, encouraging experimentation rather than repeating received ideas. Formerly Studio Art 30A-B-C. (IV)

**10A-B-C Issues in Contemporary Art and Visual Culture (4-4-4).** Contemporary art and cultural practice of the past 40 years; slide presentations and film/video screenings. Recent history of visual art. Topics relating to those various critiques of the canon presented by multicultural studies, feminism, and gay and lesbian studies. Same as Art History 10A-B-C. Formerly Studio Art 35A-B-C. (IV)



**20 Basic Drawing (4).** Encourages an investigation of the premises and limits of drawing, primarily, but not inevitably, as a two-dimensional medium. Includes slide presentations and discussions of the historical uses of a wide range of drawing. May be taken for credit twice. Formerly Studio Art 50.

**30 Basic Painting (4).** Encourages an experimental use of painting techniques, including issues of color, surface, and space. Slide presentations and critiques of student work. May be taken for credit twice. Formerly Studio Art 60.

**31A-B Mural Painting I-II (4-4).** Introduction to skills and history of mural painting. Includes training in rendering, coloration and scale, as well as presentations on contemporary muralists. Prerequisites for 31A: at least one basic painting course and consent of instructor. Prerequisite for 31B: 31A.

**40 Basic Sculpture (4).** The practice of sculpture in the contemporary arts; inclusion of spatial interventions, site-specific and environmental design, appropriation of found materials; techniques in cutting, joining, and assembly of wood, metals, and plastics. May include casting, welding, and ceramics. May be taken for credit twice. Materials fee. Formerly Studio Art 70.

**51 Basic Ceramic Sculpture (4).** Exploration of use of clay as sculptural basis with an emphasis on development of an idea and its relation to contemporary and experimental art practice. Hand-building, glazing, finishing processes, and use of other structural materials. Materials fee. May be taken for credit twice. Formerly Studio Art 86.

**61 Basic Non-Silver Imaging (4).** Focuses on means of image reproduction other than silver imaging. Explores historical and contemporary uses of such technologies. May include cyanotype, silkscreen, etching, xerox, and various dot-matrix and laser print outputs. Materials fee. May be taken for credit twice. Formerly Studio Art 80.

**65 Basic Digital Imaging (4).** An introduction to computer programs and hardware in relation to electronic manipulation of both still and video images. Work by contemporary artists using digitized imagery as well as commercial uses may be included for discussion. Materials fee. May be taken for credit twice. Formerly Studio Art 194.

**71 Basic Photography (4).** Photography as an aspect of contemporary art practice, including its relation to the documentary tradition. Slide lectures and field trips. Basic technical skills of black and white photography, including cameras, film developing, and printing. Students must have a 35 mm. non-automatic camera. Materials fee. May be taken for credit twice. Formerly Studio Art 96A-B-C.

**81 Basic Video (4).** Introduction to the strategies and range of contemporary video production, including screening/discussions on experimental and independent productions. Focuses on acquisition of basic skills in cameras, lighting, sounds, and editing. Readings and screenings are assigned. Materials fee.

**91 Basic Performance Art (4).** Concepts and history of experimental performance art, including its relation to contemporary artistic practice. An exploration of basic elements, including skills of audience- and non-audience-oriented performance. May be taken for credit twice.

## UPPER-DIVISION

**100 Special Topics in Studio Art (4).** Prerequisites: Studio Art 10A-B-C; upper-division standing or consent of instructor. Same as Women's Studies 174H when topic is appropriate. May be taken for credit six times as topics vary.

**101 Artists as Writers (4).** Contemporary art practice involves text, as final form or an integral element. Many contemporary artists consider writing as essential to their practice. Covers historical and contemporary uses of text and image as well as artists' writings. Prerequisite: Studio Art 10A-B-C or consent of instructor. May be taken for credit twice.

**102 Intermediate Drawing (4).** Continuation of the investigation initiated in Studio Art 20, with an emphasis on experimentation, personal investigation, and the development of conceptual working premises, as well as the acquisition of necessary skills. Group discussion and critique are emphasized. Prerequisites: Studio Art 1A-B-C or consent of instructor. Recommended: two basic courses in related medium. May be taken for credit twice. Formerly Studio Art 150A-B.

**103 Intermediate Painting (4).** Continuation of the investigation initiated in basic painting, with an emphasis on experimentation, personal investigation, development of conceptual working premises, as well as the acquisition of necessary skills. Group discussion and critique are emphasized. Prerequisites: Studio Art 1A-B-C or consent of instructor. Recommended: two basic

courses in related medium. May be taken for credit twice. Formerly Studio Art 160A-B.

**104 Intermediate Sculpture (4).** Investigation of three-dimensional space, including the construction of objects and the manipulation of the environment. Students define personal projects and translate personal, social, and political experience into visual meaning. Work of a range of artists introduced. Group discussion and critiques. Materials fee. Prerequisites: Studio Art 1A-B-C or consent of instructor. Recommended: two basic courses in related medium. May be taken for credit twice. Formerly Studio Art 170A-B.

**105 Intermediate Ceramic Sculpture (4).** Further investigation of the use of clay as a medium, with emphasis on experimental practice and the relationship to contemporary visual art. Emphasizes discussion of ideas, and provides information on clay body, fabrication, glazing, and firing. Materials fee. Prerequisites: Studio Art 1A-B-C or consent of instructor. Recommended: two basic courses in related medium. May be taken for credit twice. Formerly Studio Art 186A-B.

**106 Intermediate Digital Imaging (4).** A continuing investigation of computer and/or video technologies. Prerequisites: Studio Art 1A-B-C or consent of instructor. Recommended: two basic courses in related medium. May be taken for credit twice. Formerly Studio Art 194.

**107 Intermediate Photography (4).** Continued investigation of photography as a contemporary art practice and a documentary method. Emphasis on experimentation, critical thinking, development of conceptual approach, and directed projects. Color photography, lighting, nontraditional processes, and large format cameras. Readings, slide lectures, field trips. Materials fee. Prerequisites: Studio Art 1A-B-C or consent of instructor. Recommended: two basic courses in related medium. May be taken for credit twice. Formerly Studio Art 196A.

**108 Intermediate Video Production (4).** Designed to further enable the producer to conceive, develop, and produce an original videotape (single channel, multiple channel, or installation). Use of TV studio and editing facilities. Issues of film and computer compatibility. Readings, screenings, field trips, group critiques. Materials fee. Prerequisites: Studio Art 1A-B-C or consent of instructor. Recommended: two basic courses in related medium. May be taken for credit twice. Formerly Studio Art 197A.

**109 Intermediate Performance Art (4).** Continued investigation of the concepts and history of experimental performance art, including its relation to contemporary artistic practice. Continues to refine technical skills, as well as space, audiences, and cultural connections. Prerequisites: Studio Art 1A-B-C or consent of instructor. Recommended: two basic courses in related medium. May be taken for credit twice. Formerly Studio Art 191A-B.

**116 Feminist Issues in Studio Arts (4).** Feminist perspectives and topics in relation to cultural production. Feminist debates on sexuality, perspectives on women of color, on race and gender, feminist film criticism, histories of the first and second waves of feminism, histories of feminist art. Prerequisite: Studio Art 10A-B-C or consent of instructor. May be taken for credit twice. Same as Women's Studies 174J.

**117 Issues in Critical Theory (4).** Examines a range of critical theories in relation to visual language, contemporary and modern art, and/or issues of representation. Content varies and may include semiotics, structuralism, post structuralism, psychoanalysis, literary criticism, Marxism, critiques of modernism. Prerequisite: Studio Art 10A-B-C or consent of instructor. May be taken for credit twice.

**118 Issues in Urban Space, Housing, Community Development, and Architecture (4).** Social histories and cultural critiques of urban, suburban, and architectural spaces and the social construction of community and public spaces. Content varies and may deal with a variety of geographic locations, cultures, social perspectives, and artists' strategies of public address. Prerequisites: Studio Art 10A-B-C or consent of instructor. May be taken for credit twice.

**120 Issues in Narrative (4).** Emphasizes the construction of narratives in different media—painting, photography, sculpture, video. Particular attention paid to the development of personal and community histories as a working base. Prerequisites: Studio Art 10A-B-C or consent of instructor. May be taken for credit twice.

**121 Issues in Race and Representation (4).** Emphasizes the construction of racial difference and stereotyping in the visual and performing arts, and on the histories of cultures and artists who functioned outside the contemporary mainstream. Readings assigned. Prerequisite: Studio Art 10A-B-C or consent of instructor. May be taken for credit twice.

**122 Issues in Lesbian and Gay Visual Representation (4).** History of lesbian and gay culture in relation to the visual and performing arts; the construction of sexual difference, debates around positive and negative representations, queer activism, and the intersections of sexuality with gender and race. Readings assigned. Prerequisite: Studio Art 10A-B-C or consent of instructor. May be taken for credit twice. Same as Women's Studies 161B.

**123 Issues in Cultural Display (4).** Lecture/seminar on issues of the production and representation of culture, including patronage, museum history, exhibition design and history, arts funding, cultural identity, and cultural diversity. Field trips, screening and slide lectures are generally assigned. Prerequisites: Studio Art 10A-B-C or consent of instructor. May be taken for credit twice. Formerly Studio Art 195.

**124 Issues in the History of Intermedia (4).** Examines, in a nonlinear and eclectic fashion of contemporary oppositional art practices, work not considered art-making within conventional definitions, and intermedia approaches from the postwar period. Reading and lectures will be drawn from a wide range of sources. Prerequisite: Studio Art 10A-B-C or consent of instructor. May be taken for credit twice.

**126A, B Issues in Computer Media and Technology: Women's Place in Cyberspace (4, 4).** Focuses on polarization of gender roles and feminist issues through computers and programming. Issues include male/female stereotypes built into software, internet and bulletin boards, pornography programs, multimedia literature, and economy in production of technology. Previous computer experience helpful. Prerequisite: Art 10A-B-C or consent of instructor.

**127A, B Issues in Video History (4, 4).** History of the video medium outside its use as television, ranging from the 1950s-90s. Topics include: electronics, conceptual and non-edited work, surveillance, documentary and documentation, performance art, and its use in installations and sculpture. Prerequisite: Art 10A-B-C or consent of instructor.

**130 Projects in New Technologies (4).** Working with media such as electronic still cameras, desktop publishing, faxes, satellites, virtual reality, digitized imaging. Cultural issues pertinent to the emergence of new technology (e.g., ethical concerns, social impact, copyright laws, nontraditional approaches to distribution, cyberpunk, global markets). Prerequisites: two intermediate courses and consent of instructor. May be repeated for credit as topics vary. Formerly Studio Art 194.

**131 Projects in Installation (4).** Investigates interior installation in particular spaces. Working in teams, students install, discuss, and remove projects. Technical information and hands-on experience with various media is provided. Prerequisites: two intermediate courses or consent of instructor. May be repeated for credit as topics vary. Formerly Studio Art 170C.

**132 Projects in Collaboration (4).** Focuses on various approaches, historical precedents, and contemporary strategies to artists' collaborations. Students work in collaboration with other students and/or with people outside the class. Course content and structure varies according to instructor(s). Prerequisites: two intermediate courses or consent of instructor. May be repeated for credit as topics vary.

**133 Projects in Documentary Practices (4).** An investigation and discussion of a variety of critical stances and approaches to making documentary, as well as a project-based exploration of documentary strategies in all media. Prerequisites: two intermediate courses and consent of instructor. May be repeated for credit as topics vary.

**134 Projects in Sound (4).** Explores ways to create sound ranging from electronic/computerized equipment to nontraditional instruments to found noises. Related cultural and social critiques (rap, rock and roll, jazz, MTV, blues, "world" music, new technologies, sampling, copyright laws). Prerequisites: two intermediate courses and consent of instructor. May be repeated for credit as topics vary.

**135 Projects in Mural Painting and Site-Specific Art (4).** Methods and histories of mural painting and development of audiences outside museums and galleries. Examines ways public art producers facilitate community involvement, methods of researching cultural contexts in relation to specific sites, and diverse approaches to collaboration. Students produce a mural. Prerequisites: two intermediate courses and consent of instructor. May be repeated for credit as topics vary.

**136 Projects in Ecologies and Environmental Art (4).** Focus on developing studio projects concerned with ecological issues and land use. A wide range of contemporary art, social strategies and diverse political critiques addressing environmental and land use concerns considered. Prerequisites: two intermediate courses. May be repeated for credit as topics vary.

**137 Projects in Autobiography, Personal Narratives, and Community Histories (4).** An investigation of personal narratives, storytelling, and oral histories as a basis for art. Issues of interpretation and subjectivity. Considers autobiography as a means to make visible voices, histories, experiences and perceptions marginalized, misrepresented, and/or absented from dominant representations. Prerequisites: two intermediate courses and consent of instructor. May be repeated for credit as topics vary.

**138 Projects in Public Art (4).** Addresses the formation of culturally diverse arts audiences, institutions, boundaries, and barriers, including presentations on artists and strategies of exhibition/distribution outside the mainstream. Class projects, collaborative work, and group investigation. Prerequisites: two intermediate courses and consent of instructor. May be repeated for credit as topics vary.

**139 Projects in Intermedia (4).** Investigation of artistic practices not necessarily object-oriented or bound to the distribution strategies of traditional media. Emphasizes interdisciplinary conceptualization and research, using digital information storage, as well as "low-tech" means such as the body. Individual or group projects required. Prerequisites: two intermediate courses and consent of instructor. May be repeated for credit as topics vary. Formerly Studio Art 188.

**140 Projects in Interdisciplinary Studies (4).** An individually directed study critique and/or topics course for students interested in researching and integrating ideas in their studio work from fields outside of visual art. Prerequisites: two intermediate courses and consent of instructor. May be repeated for credit as topics vary.

**141 Projects in Video Sketchbook (4).** Devoted to using the camera as a sketchbook or diary. Goal is to develop sources of inspiration in order to produce several short video pieces. Students employ various techniques and experiment with various strategies. Development and shaping of each student's individual voice. Prerequisite: Studio Art 81. May be taken for credit twice.

**142 Projects in Pre-Production Methods and Strategies (4).** Deals with concerns relative to developing concepts and strategies prior to shooting. Focuses on developing practical and creative concerns, including script development, storyboarding, development of camera movements, and sequences relating to theoretical concerns. Prerequisite: Studio Art 141 or consent of instructor. May be taken for credit twice.

**150 Advanced Studio Topics/Painting (4).** Provides an intensive and specialized working environment. Thematic issues and material strategies explored. Prerequisites: two intermediate courses and consent of instructor. May be repeated for credit as topics vary. Formerly Studio Art 160C.

**150C Advanced Drawing (4).** Advanced studio problems for visual exploration. Students pursue individual solutions to self-defined and presubscribed projects. Techniques/materials are individual choice. Continual analysis of the personal process. Prerequisites: Studio Art 50A, 150A-B. May be repeated for credit with consent of instructor.

**151 Advanced Studio Topics/Sculpture (4).** Provides an intensive and specialized working environment. Thematic issues and material strategies will be explored. Prerequisites: two intermediate courses and consent of instructor. Materials fee. May be repeated for credit as topics vary. Formerly Studio Art 170C.

**152 Advanced Studio Topics/Photography (4).** Focused investigation of a range of issues in photographic practice, with an emphasis on defining individual projects and refining critical and conceptual approaches. Readings, slide lectures, and field trips. Materials fee. Prerequisites: Studio Art 107 or consent of instructor. May be repeated for credit as topics vary. Formerly Studio Art 196B-C.

**153 Advanced Studio Topics/Video (4).** The class will be directed to the production of individual or collaborative videotapes, using studio, portable camera, and editing facilities and sound and computer elements. Emphasis will be on individually initiated projects. Readings and screenings are assigned. Materials fee. Prerequisites: Studio Art 108 or consent of instructor. May be repeated for credit as topics vary. Formerly Studio Art 197C.

**154 Advanced Studio Topics/Performance (4).** An intensive investigation of the practice of performance art, with an emphasis on the development of individual projects, and the refinement of various technical skills, as well as audiences, spaces, and cultural connections. Prerequisites: Studio Art 10A-B-C, 109, and consent of instructor. May be repeated for credit as topics vary. Formerly Studio Art 191C.

**155 Advanced Studio Topics/Large-Scale Photography (4).** Large-scale black and white photographic production and discussion of contemporary art and photographic practices. Methods and approaches; related topics, e.g., documentary practices, advertising imagery and the construction of public space, artists' billboard images. Materials fee. Prerequisites: two intermediate photography courses. Formerly Studio Art 196B-C.

**156 Advanced Studio Topics/Ceramic Sculpture (4).** Discussion of ideas, techniques, and personal control of form. Clay body, fabrication, glazing, and firing. Emphasis on development of personal direction. Prerequisites: Studio Art 105. Materials fee. May be repeated for credit with consent of instructor. Formerly Studio Art 186C.

**157 Color Photography (4).** Introduction to color photographic theory, process, and practice, intended to build on previous photography knowledge. Also serves as an introduction to conceptual and historical issues particular to color photography as an aspect of contemporary art practice. Slide lectures, readings, technical demonstrations. Prerequisite: Studio Art 107 or consent of instructor. May be taken for credit twice.

**190 Senior Project (4).** Directed-study critique class in preparation for final project and life after graduation; documentation and portfolio preparation for graduate school. Investigation of exhibition spaces and funding opportunities, participation in artists' communities outside the university, artists' rights issues. Prerequisite: senior standing.

**191 Studio Problems: Methods and Materials (4).** An open media discussion and critique course emphasizing the development of working ideas and the execution of projects in all media. Readings assigned as required; field trips, slide and film/video presentations are integral. Prerequisites: two intermediate courses. May be repeated for credit as topics vary. Same as Women's Studies 174I when topic is appropriate. Formerly Studio Art 190.

**192 Studio in Painting (4)**

**193 Studio in Sculpture (4)**

**197 Studio Art Internship (1 to 3).** Under faculty supervision, students participate directly in a variety of art institutions/settings, including museums, galleries, and nonprofit organizations. Prerequisites: junior standing, consent of instructor, and consent of department chair. May be repeated for credit for a total of nine units.

**198 Senior Exhibition (0).** Preparation, installation, and participation in the annual senior exhibition. Pass/Not Pass Only. Four units of workload credit only. Prerequisite: senior standing; Studio Art majors only.

**199 Independent Study (1 to 4).** Individual study or directed creative projects as arranged with faculty member. Prerequisite: consent of instructor. May be repeated for credit.

## GRADUATE

**215 Seminar: Issues in Contemporary Art (4) F, W, S.** Issues of contemporary art and media practice: feminism, multicultural studies, gay and lesbian studies, communications theory, border cultures, structuralism and poststructuralism, psychoanalysis. Performance art, sound, painting, sculpture, photography, film, video, and fiction. Readings, screenings, field trips. Satisfactory/Unsatisfactory only. Prerequisite: graduate standing or consent of instructor. May be taken for credit six times.

**220 Seminar: Issues in Contemporary Art (4) F, W, S.** An in-depth extension of Studio Art 215 leading to focused analysis and research on contemporary issues. May be team taught in conjunction with faculty from art history, film studies, ethnic studies, or women's studies. Visiting artists/critics. Satisfactory/Unsatisfactory only. Prerequisite: Studio Art 215. May be taken for credit twice. Formerly Studio Art 215B.

**230 Graduate Critique: Issues in Studio Practice (4) F, W, S.** A critique-based course focusing on the studio production of the individuals enrolled and aiming to develop a serious and sophisticated environment for peer critique. Readings, screenings, and field trips are generally assigned. Satisfactory/Unsatisfactory only. Open to upper-division undergraduates at the discretion of the instructor. May be taken for credit six times.

**240 Graduate Projects (1 to 4) F, W, S.** Independent projects under faculty supervision. May be repeated for credit up to a total of 24 units.

**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 BIOLOGICAL SCIENCES

## Ellie Ehrenfeld, **Dean**

101 Biological Sciences Administration  
Undergraduate Counseling: (714) 824-5318  
Graduate Programs: (714) 824-4581  
World Wide Web: <http://www.bio.uci.edu/>

## Faculty

- Nancy Allbritton, Ph.D. Massachusetts Institute of Technology, M.D. The Johns Hopkins University School of Medicine, *Assistant Professor of Physiology and Biological Sciences*
- Joseph Arditti, Ph.D. University of Southern California, *Professor of Biological Sciences*
- Stuart M. Arfin, Ph.D. Albert Einstein College of Medicine, *Chair (Acting) of the Department of Biological Chemistry and Professor of Biological Chemistry and Biological Sciences*
- Kavita Arora, Ph.D. Bombay University, *Assistant Professor of Biological Sciences*
- Dana Aswad, Ph.D. University of California, Berkeley, *Professor of Biological Sciences*
- Peter R. Atsatt, Ph.D. University of California, Los Angeles, *Professor Emeritus of Biological Sciences*
- 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*
- Kenneth M. Baldwin, Ph.D. University of Iowa, *Professor of Physiology and Biophysics, Biological Sciences, and Community and Environmental Medicine*
- Ernest A. Ball, Ph.D. University of California, Berkeley, *Professor Emeritus of Biological Sciences*
- Tallie Z. Baram, M.D. University of Miami, Ph.D. Weizmann Institute of Science (Israel), *Professor of Pediatrics, Neurology, and Anatomy and Neurobiology, and Danette Shepard Chair in Neurological Science*
- Albert F. Bennett, Ph.D. University of Michigan, *Professor of Biological Sciences*
- Rudi C. Berkelhamer, Ph.D. University of California, Berkeley, *Lecturer in Biological Sciences*
- Michael W. Berns, Ph.D. Cornell University, *Professor of Surgery, Cell Biology, Ophthalmology, Radiology, and Management, and Arnold and Mabel Beckman Chair in Laser Biomedicine*
- Robert H. Blanks, Ph.D. University of California, Los Angeles, *Professor of Anatomy and Neurobiology, Otolaryngology, and Biological Sciences*
- Hans R. Bode, Ph.D. Yale University, *Chair of the Department of Developmental and Cell Biology, Associate Director of the Developmental Biology Center, and Professor of Biological Sciences*
- Peter A. Bowler, Ph.D. University of California, Irvine, *Associate Adjunct Professor of Ecology and Evolutionary Biology and of Environmental Analysis and Design, and UC Natural Reserve System Academic Coordinator*
- Timothy J. Bradley, Ph.D. University of British Columbia, *Chair of the Department of Ecology and Evolutionary Biology and Professor of Biological Sciences*
- Ralph A. Bradshaw, Ph.D. Duke University, *Professor of Biological Chemistry and of Biological Sciences*
- Marianne Bronner-Fraser, Ph.D. The Johns Hopkins University, *Professor of Biological Sciences and of Physiology and Biophysics*
- Peter J. Bryant, Ph.D. University of Sussex, *Director of the Developmental Biology Center and Professor of Biological Sciences*
- Susan V. Bryant, Ph.D. University of London, *Chair of the Department of Developmental and Cell Biology (Acting) and Professor of Biological Sciences*
- Barbara K. Burgess, Ph.D. Purdue University, *Professor of Molecular Biology and Biochemistry and Biological Sciences*
- Nancy Burley, Ph.D. University of Texas, Austin, *Professor of Biological Sciences*
- Michael D. Cahalan, Ph.D. University of Washington, *Chair of the Department of Physiology and Biophysics and Professor of Physiology and Biophysics and Biological Sciences*
- Anne L. Calof, Ph.D. University of California, San Francisco, *Assistant Professor of Anatomy and Neurobiology and Biological Sciences*
- Diane R. Campbell, Ph.D. Duke University, *Associate Professor of Biological Sciences*
- Richard D. Campbell, Ph.D. The Rockefeller Institute, *Professor of Biological Sciences*
- F. Lynn Carpenter, Ph.D. University of California, Berkeley, *Professor of Biological Sciences*
- K. George Chandy, Ph.D. University of Birmingham (England), M.B.B.S. Christian Medical College, Vellore (India), *Professor of Physiology and Biophysics, Microbiology and Molecular Biology, and Biological Sciences*
- Ken W.-Y. Cho, Ph.D. University of Pennsylvania, *Assistant Professor of Biological Sciences*
- Carl Cotman, Ph.D. Indiana University, *Professor of Biological Sciences, Neurology, and Psychiatry and Human Behavior*
- Michael G. Cumsy, Ph.D. University of California, Berkeley, *Associate Professor of Biological Sciences and Molecular Biology and Biochemistry*
- Dennis D. Cunningham, Ph.D. University of Chicago, *Chair of the Department of Microbiology and Molecular Genetics and Professor of Microbiology and Molecular Genetics and Biological Sciences*
- Rowland H. Davis, Ph.D. Harvard University, *Professor of Molecular Biology and Biochemistry and Biological Sciences*
- Ellie Ehrenfeld, Ph.D. University of Florida, *Dean of the School of Biological Sciences and Professor of Molecular Biology and Biochemistry and Biological Sciences*
- James H. Fallon, Ph.D. University of Illinois, *Professor of Anatomy and Neurobiology and Biological Sciences*
- Hung Fan, Ph.D. Massachusetts Institute of Technology, *Professor of Biological Sciences*
- Walter M. Fitch, Ph.D. University of California, Berkeley, *Chair of the Department of Ecology and Evolutionary Biology and Professor of Biological Sciences*
- Donald E. Fosket, Ph.D. University of Idaho, *Professor Emeritus of Biological Sciences*
- Steven A. Frank, Ph.D. University of Michigan, *Associate Professor of Biological Sciences*
- Ron D. Frostig, Ph.D. University of California, Los Angeles, *Assistant Professor of Biological Sciences*
- Christine M. Gall, Ph.D. University of California, Irvine, *Vice Chair of the Department of Anatomy and Neurobiology and Professor of Anatomy and Neurobiology and Biological Sciences*
- Allen G. Gibbs, Ph.D. University of California, San Diego, *Assistant Professor of Biological Sciences*
- Roland A. Giolli, Ph.D. University of California, Berkeley, *Professor of Anatomy and Neurobiology and Biological Sciences*
- Charles Glabe, Ph.D. University of California, Davis, *Professor of Biological Sciences*
- Alan L. Goldin, M.D., Ph.D. University of Michigan, *Associate Professor of Microbiology and Molecular Genetics, Physiology and Biophysics, and Biological Sciences*
- Sidney H. Golub, Ph.D. Temple University, *Executive Vice Chancellor and Professor of Microbiology and Molecular Genetics, Molecular Biology and Biochemistry, and Surgery*
- Gale A. Granger, Ph.D. University of Washington, *Professor of Biological Sciences and Microbiology and Molecular Genetics*
- Chris L. Greer, Ph.D. University of California, Berkeley, *Associate Professor of Biological Chemistry and Biological Sciences*
- George A. Gutman, Ph.D. Stanford University, *Professor of Microbiology and Molecular Genetics, Physiology and Biophysics, and Biological Sciences*
- Harry T. Haigler, Ph.D. Vanderbilt University, *Professor of Physiology and Biophysics, Biological Sciences, and Biological Chemistry*
- James E. Hall, Ph.D. University of California, Riverside, *Professor of Physiology and Biophysics and Biological Sciences*
- Barbara A. Hamkalo, Ph.D. University of Massachusetts, *Professor of Biological Sciences*
- G. Wesley Hatfield, Ph.D. Purdue University, *Professor of Microbiology and Molecular Genetics and Biological Sciences*
- Bradford A. Hawkins, Ph.D. University of California, Riverside, *Assistant Professor of Biological Sciences*
- Patrick L. Healey, Ph.D. University of California, Berkeley, *Professor Emeritus of Biological Sciences*

- Agnes Henschen-Edman, M.D. Karolinska Institute (Stockholm), *Professor of Biological Sciences*
- James W. Hicks, Ph.D. University of New Mexico, *Associate Professor of Biological Sciences*
- Franz Hoffmann, Ph.D. University of Hohenheim, *Associate Professor of Biological Sciences*
- Richard R. Hudson, Ph.D. University of Pennsylvania, *Professor of Biological Sciences*
- Christopher C. W. Hughes, Ph.D. University of London, *Assistant Professor of Molecular Biology and Biochemistry and Biological Sciences*
- George L. Hunt, Jr., Ph.D. Harvard University, *Professor of Biological Sciences*
- Anthony A. James, Ph.D. University of California, Irvine, *Associate Professor of Biological Sciences*
- Edward G. Jones, M.D., Ph.D. Oxford University, *Professor of Anatomy and Neurobiology, and Developmental and Cell Biology*
- Robert K. Josephson, Ph.D. University of California, Los Angeles, *Professor of Biological Sciences*
- Keith Justice, Ph.D. University of Arizona, *Professor Emeritus of Biological Sciences*
- Glenn H. Kageyama, Ph.D. University of California, San Francisco, *Assistant Adjunct Professor of Anatomy and Neurobiology and Biological Sciences*
- Herbert P. Killackey, Ph.D. Duke University, *Chair of the Department of Psychobiology and Professor of Biological Sciences and of Anatomy and Neurobiology*
- Leonard M. Kitzes, Ph.D. University of California, Irvine, *Professor of Anatomy and Neurobiology, Biological Sciences, and Otolaryngology*
- Daniel J. Knauer, Ph.D. University of Nebraska, *Associate Professor of Biological Sciences*
- Harold Koopowitz, Ph.D. University of California, Los Angeles, *Director, UCI Arboretum and Professor of Biological Sciences*
- Stuart M. Krassner, Sc.D. The Johns Hopkins University, *Professor of Biological Sciences*
- Frank LaFerla, Ph.D. University of Minnesota, *Assistant Professor of Biological Sciences*
- Arthur D. Lander, Ph.D. University of California, San Francisco, *Associate Professor of Biological Sciences*
- Janos K. Lanyi, Ph.D. Harvard University, *Professor of Physiology and Biophysics, Microbiology and Molecular Genetics, and Biological Sciences*
- George V. Lauder, Ph.D. Harvard University, *Associate Dean for Graduate Affairs of the School of Biological Sciences and Professor of Biological Sciences*
- Howard M. Lenhoff, Ph.D. The Johns Hopkins University, *Professor Emeritus of Biological Sciences*
- Michael Leon, Ph.D. University of Chicago, *Associate Dean of Undergraduate Affairs of the School of Biological Sciences and Professor of Biological Sciences*
- Haoping Liu, Ph.D. Cornell University, *Assistant Professor of Biological Chemistry and Biological Sciences*
- Kenneth J. Longmuir, Ph.D. University of Oregon, *Associate Professor of Physiology and Biophysics and Biological Sciences*
- Gary S. Lynch, Ph.D. Princeton University, *Professor of Biological Sciences, Information and Computer Science, and Cognitive Sciences*
- Richard E. MacMillen, Ph.D. University of California, Los Angeles, *Professor Emeritus of Biological Sciences*
- Jerry E. Manning, Ph.D. University of Utah, *Chair of the Department of Molecular Biology and Biochemistry and Professor of Biological Sciences*
- J. Lawrence Marsh, Ph.D. University of Washington, *Associate Professor of Biological Sciences*
- John F. Marshall, Ph.D. University of Pennsylvania, *Professor of Biological Sciences*
- James L. McGaugh, Ph.D. University of California, Berkeley, *Director of the Center for the Neurobiology of Learning and Memory and Professor Emeritus of Biological Sciences*
- Calvin S. McLaughlin, Ph.D. Massachusetts Institute of Technology, *Professor of Biological Chemistry, Biological Sciences, Ophthalmology, and Community and Environmental Medicine*
- Raju S. Metherate, Ph.D. McGill University, Montreal, *Assistant Professor of Biological Sciences*
- Ronald L. Meyer, Ph.D. California Institute of Technology, *Professor of Biological Sciences*
- Ricardo Miledi, M.D. Universidad Nacional Autónoma de México, *UCI Distinguished Professor of Biological Sciences*
- Laurence D. Mueller, Ph.D. University of California, Davis, *Associate Professor of Biological Sciences*
- R. Michael Mulligan, Ph.D. Michigan State University, *Associate Professor of Biological Sciences*
- Masayasu Nomura, Ph.D. University of Tokyo, *Professor of Biological Chemistry, Microbiology and Molecular Genetics, and Biological Sciences and Grace Beekhuis Bell Chair in Biological Chemistry*
- Michael B. O'Connor, Ph.D. Tufts University, *Associate Professor of Biological Sciences*
- Diane K. O'Dowd, Ph.D. University of California, San Diego, *Associate Professor of Biological Sciences and Anatomy and Neurobiology*
- Timothy F. Osborne, Ph.D. University of California, Los Angeles, *Assistant Professor of Biological Sciences*
- Ian Parker, Ph.D. University College, London, *Professor of Biological Sciences*
- Thomas L. Poulos, Ph.D. University of California, San Diego, *Professor of Molecular Biology and Biochemistry, Physiology and Biophysics, and Biological Sciences*
- Charles E. Ribak, Ph.D. Boston University, *Professor of Anatomy and Neurobiology and Biological Sciences*
- Richard T. Robertson, Ph.D. University of California, Irvine, *Chair of the Department of Anatomy and Neurobiology and Professor of Anatomy and Neurobiology and Biological Sciences*
- Michael R. Rose, Ph.D. University of Sussex, *Professor of Biological Sciences*
- Suzanne B. Sandmeyer, Ph.D. University of Washington, *Professor of Microbiology and Molecular Genetics and Biological Sciences*
- Rozanne Sandri-Goldin, Ph.D. The Johns Hopkins University, *Professor of Microbiology and Molecular Genetics and Biological Sciences*
- Bert L. Semler, Ph.D. University of California, San Diego, *Professor of Microbiology and Molecular Genetics and Biological Sciences*
- Donald Senear, Ph.D. University of Washington, *Associate Professor of Biological Sciences*
- Martin A. Smith, Ph.D. University of Newcastle Upon Tyne, *Associate Professor of Anatomy and Neurobiology, and Developmental and Cell Biology*
- Ivan Soltesz, Ph.D. L. Eötvös University (Hungary), *Assistant Professor of Anatomy and Neurobiology, and Physiology and Biophysics*
- Eric J. Stanbridge, Ph.D. Stanford University, *Professor of Microbiology and Molecular Genetics and Biological Sciences*
- Wendell M. Stanley, Jr., Ph.D. University of Wisconsin, *Senior Lecturer Emeritus in Biochemistry*
- Robert Steele, Ph.D. Yale University, *Associate Professor of Biological Chemistry and Biological Sciences*
- Grover C. Stephens, Ph.D. Northwestern University, *Professor Emeritus of Biological Sciences*
- Georg Striedter, Ph.D. University of California, San Diego, *Assistant Professor of Biological Sciences*
- Katumi Sumikawa, Ph.D. Imperial College, London (England), *Associate Professor of Biological Sciences*
- Donald F. Summers, M.D. University of Illinois, *Professor of Medicine, Microbiology and Molecular Genetics, and Biological Sciences*
- Richard Symanski, Ph.D. Syracuse University, *Senior Lecturer in Biological Sciences*
- Andrea J. Tenner, Ph.D. University of California, San Diego, *Associate Professor of Molecular Biology and Biochemistry and Biological Sciences*
- Krishna K. Tewari, Ph.D. Lucknow University, *Professor of Biological Sciences*
- Sujata Tewari, Ph.D. McGill University, *Associate Professor of Psychiatry and Human Behavior 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 Biological Sciences*
- Marian Waterman, Ph.D. University of California, San Diego, *Assistant Professor of Microbiology and Molecular Genetics and of Biological Sciences*
- Norman M. Weinberger, Ph.D. Western Reserve University, *Professor of Biological Sciences and Cognitive Sciences*

Arthur E. Weis, Ph.D. University of Illinois, *Associate Professor of Biological Sciences*

John H. Weiss, M.D., Ph.D. Stanford University, *Assistant Professor of Neurology, Anatomy and Neurobiology, and Biological Sciences*

Stephen G. Weller, Ph.D. University of California, Berkeley, *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, *Professor Emeritus of Biological Sciences*

Pauline I. Yahr, Ph.D. University of Texas, *Professor of Biological Sciences*

## OVERVIEW

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 900 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 nine-quarter Biological Sciences Core. Upper-division laboratories and satellite courses developing the major concepts of modern biology 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. 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 here in the School of Biological Sciences section. Students interested in other areas of psychology are advised to consult the course listings in the School of Social Ecology and the Department of Cognitive Sciences sections of the *Catalogue*.

Students with an interest in the application of ecology to human needs may choose the Applied Ecology major, which is offered jointly by the School of Biological Sciences and the School of

Social Ecology. Information is available in the School of Social Ecology section.

## Degrees

Biological Sciences ..... B.S., M.S., Ph.D.

Undergraduate specializations are available in the areas of Cell Biology, Developmental Biology, Ecology, Evolution, Microbiology, Molecular Biology and Biochemistry, Neurosciences, Physiology, and Plant Sciences.

Opportunities are available at the graduate level to specialize in Anatomy and Neurobiology, Biological Chemistry, Developmental and Cell Biology, Ecology and Evolutionary Biology, Microbiology and Molecular Genetics, Molecular Biology and Biochemistry, Physiology and Biophysics, Protein Engineering Science, and Psychobiology.

Applied Ecology ..... B.S.  
(offered jointly with the School of Social Ecology)

## Honors

**Graduation with Honors.** Of the graduating seniors, no more than 12 percent will receive honors: approximately 1 percent *summa cum laude*, 3 percent *magna cum laude*, and 8 percent *cum laude*. The selection for these awards is based on winter quarter rank-ordered grade point averages. To be eligible for honors at graduation, the student must, by the end of winter quarter of the senior year, file an application to graduate in the Biological Sciences Student Affairs Office and have completed at least 72 units in residence at a University of California campus. In addition, any corrections to the student's academic record must be processed by the Registrar's Office by the end of the second week of spring quarter. Other important factors are considered (see page 55).

**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.

**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.

**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.

**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.

**Edward A. Steinhaus Memorial Award.** The Edward A. Steinhaus Memorial Award is given to an outstanding graduate Teaching Assistant. Three second-place awards also are given.

**Joseph H. Stephens Award for Outstanding Research in Ecology and Conservation.** This award is granted to an undergraduate student who has demonstrated outstanding research in ecology and conservation.

**Joseph H. Stephens Award for Outstanding Research in Biochemistry and Molecular Biology.** This award is granted to an undergraduate student who has demonstrated outstanding research in biochemistry and molecular biology.

**Jayne Unzelman Scholarship.** The Jayne Unzelman Scholarship is presented to an undergraduate student who has shown academic excellence and been of service to the School of Biological Sciences and/or the University, and to the community.

**Special Service Awards.** These awards are given to students who have demonstrated great service to the School, the University, and/or community.

The preceding Honors, Scholarships, Prizes, and Awards are presented at the annual Biological Sciences Honors Convocation held the first week of June.

## Undergraduate Program

### ADMISSION TO THE MAJOR IN BIOLOGICAL SCIENCES

In the event that the number of students who elect Biological Sciences as a major exceeds the number of positions available, applicants may be subject to screening beyond minimum University of California admissions requirements.

**Freshmen:** Preference will be given to those who rank the highest using the selection criteria as stated in the Undergraduate Admissions section of this *Catalogue*.

**Transfer students:** A student seeking admission to the School of Biological Sciences from colleges and schools other than UCI must satisfy the University requirements for admission with advanced standing. Applicants with the highest grades overall and in the following required courses will receive preference: a year of general chemistry with laboratory, an approved sequence of biological science courses, and an approved lower-division course in writing.

No student may enter as a double major, but students interested in other areas may apply to become double majors after the first quarter, if the second school or program approves. A strong academic performance in the second area is requisite for acceptance as a double major.

### BIOLOGICAL SCIENCES CHANGE OF MAJOR POLICY FOR CONTINUING UCI STUDENTS

Biological Sciences majors have first priority for enrolling in required biology courses. Students who are Undecided/Undeclared, Unaffiliated, or in majors other than the Biological Sciences will be able to attempt to enroll in required biology classes during the TELE Adjustment Period for each quarter. There is no guarantee that students outside of the Biological Sciences major will be able to enroll in required biology courses.

The following criteria must be met to be considered for admission into the School of Biological Sciences. Change of Major applications are accepted and reviewed by the School throughout the year. Students are encouraged to submit their change of major request as soon as they have met the following requirements:

**Students Who Entered UCI as Freshmen:** (a) completion of Chemistry 1A-B-C and 1LB-LC with an average 2.7 GPA in these courses, with no grade lower than a C; (b) an average 2.7 GPA in other required science courses taken with no grade lower than a C; (c) a cumulative GPA of 2.5 or better; (d) a GPA of 2.0 or better in the quarter prior to entering Biological Sciences; and (e) completion of the Subject A Requirement.

**Students Who Entered UCI as Transfers:** (a) completion of at least three academic quarters at UCI with a minimum cumulative GPA of 2.5; (b) GPA of 2.0 or better for the quarter prior to entering Biological Sciences; (c) completion of either Chemistry 1A-B-C and 1LB-LC with an average GPA of 2.7 or better in these courses, with no grade lower than a C, or if general chemistry has been completed prior to transfer to UCI, completion of one year of required science courses for the Biological Sciences major with an average GPA of 2.7, with no grade lower than a C.

Selection criteria are subject to change. Students should consult the Biological Sciences Student Affairs Office for current information.

Additional information is available in the Undergraduate Admissions section of this *Catalogue*.

### REQUIREMENTS FOR THE B.S. DEGREE IN BIOLOGICAL SCIENCES

**University Requirements:** See pages 57-61.

#### School Requirements

Biological Sciences Core Curriculum (94, 96, 97, 98, 99, 100L, 108, 109, 110); four satellite courses (see School Residence Requirement below; Chemistry 130A-B-C or 131A-B-C can be used to partially satisfy the satellite requirement; Psychology/Biological Sciences double majors can also use Psychology 112A-B-C to satisfy the satellite requirement); three upper-division laboratories selected from Biological Sciences 111L, 112L, 113, 114L, 115L, 122L, and 166 (see School Residence Requirement below); Chemistry 1A-B-C, 1LB-LC; Chemistry 51A-B-C, 51LA-LB or 52A-B-C, 52LA-LB; Mathematics 2A-B-C or 2A-B and 7; Physics 3A-B-C, 3LB-LC or 5A-B-C, 5LB-LC or H6A-B-C, 5LB-LC; and Humanities 1A-B-C, or its alternative, 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).

Prerequisites for all Biological Sciences Core courses are rigorously enforced. Students must have a 2.0 cumulative grade point average in the Biological Sciences Core Curriculum, four satellite courses, and three upper-division laboratories.

**School Residence Requirement:** All required satellite courses and upper-division laboratories must be successfully completed at UCI.

**Specializations:** Students may select an area of specialization and complete the specified laboratory course and four of the satellite courses in one area.



**Cell Biology.** Laboratory: Biological Sciences 111L; Satellites: 121, 128, 130, 143, 144A, 144B, 144C, 145A, 145B.

**Developmental Biology.** Laboratory: Biological Sciences 111L; Satellites: 136, 137B, 144A, 144B, 145A, 145B, 147, 148, 149, 151, 157.

**Ecology.** Laboratory: Biological Sciences 166; Satellites: 150, 174, 175, 176, 178, 179, 181, 185, 186.

**Evolution.** Laboratory: Biological Sciences 115L; Satellites: Biological Sciences 168, 172, 173, 174, 176, 184, 185.

**Microbiology.** Laboratory: Biological Sciences 122L; Satellites: 118, 118L, 122, 124, 125, 126, 127, 137A, 143.

**Molecular Biology and Biochemistry.** Laboratory: Biological Sciences 114L; Satellites: 121, 123, 124, 125, 126, 128, 140, 144A, 144B, 144C, 145A, 145B, 147, 151.

**Neurosciences.** Laboratory: Biological Sciences 113L; Satellites: 117, 132, 149, 152, 153, 154, 155, 156, 158, 159, 160, 161, 162, 163, 164, 165, 171.

**Physiology.** Laboratory: Biological Sciences 112L; Satellites: 132, 134, 138, 157, 183, 188, 189.

**Plant Sciences.** Laboratory: Biological Sciences 111L; Satellites: 129, 129L, 134, 141, 144C, 147, 172, 185.

### 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 the exception of: the upper-division writing requirement; Category III, Social and Behavioral Sciences; Category VI, Language Other Than English; and Category VII, Multicultural Studies and International/Global Issues.

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, Mathematics and Symbolic Systems, 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 very important for students to take their required physical sciences early, particularly general and organic chemistry. Students who have not completed high school chemistry are well advised to complete a preparatory chemistry course before entering UCI. The academic program shown is only a suggested program. Students should consult the Biological Sciences Student Affairs Office for individual academic planning.

Freshmen will normally take Biological Sciences 94, Humanities 1A, Chemistry 1A, and a freshman seminar (Biological Sciences 2A) during the fall quarter. Students not taking Humanities 1A should enroll in Biological Sciences 94 in the fall quarter. Students will then continue with Biological Sciences 96 and complete their general chemistry and humanities requirement the remaining winter and spring quarters.

Sophomores begin organic chemistry (Chemistry 51A or 52A), continue the Biological Sciences Core with 97, 98, and 99, and complete the Humanities requirement if they have not taken it during their freshman year. Sophomores often begin taking courses in other disciplines to meet the UCI breadth requirement and fulfill their mathematics requirement if they have not done so as freshmen.

During their junior year, most majors complete the Biological Sciences Core and take physics. Students who intend to double major

in Chemistry will be required to take Physics 5A-B-C or H6A-B-C in place of Physics 3A-B-C. Juniors complete their breadth requirements and usually start their research and their upper-division laboratory and satellite courses. Since research and the content of satellite courses are based upon material contained in the Core, it is usually preferable for students to have completed most of the Core before undertaking certain satellite courses or research projects.

Finally, during their senior year, students continue their research and their optional specializations by completing the remaining required upper-division laboratory and satellite courses.

A special program of study should be considered by students who enter the biological sciences with a weak background in the sciences and/or in writing skills. A weak background might consist of not completing high school chemistry or mathematics through trigonometry, and/or not satisfying the Subject A requirement before entering the University. This program allows a student to gain the necessary background skills and will probably 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.

### Sample Program — Biological Sciences

FALL	WINTER	SPRING
<b>Freshman</b>		
Chemistry 1A	Bio. Sci. 94	Bio. Sci. 96
Humanities 1A <sup>1</sup>	Chemistry 1B, LB	Chemistry 1C, LC
	Humanities 1B	Humanities 1C
<b>Sophomore</b>		
Bio. Sci. 97	Bio. Sci. 98	Bio. Sci. 99
Chemistry 51A,	Bio. Sci. 100L <sup>3</sup>	Chemistry 51C
51LA <sup>2</sup>	Chemistry 51B,	Mathematics 2C or 7
Mathematics 2A	51B	
	Mathematics 2B	
<b>Junior</b>		
Bio. Sci. Core	Bio. Sci. Core	Bio. Sci. Core
Physics	Physics	Physics
Bio. Sci. Satellite <sup>4</sup>	Bio. Sci. Satellite	Bio. Sci. Satellite
or upper-division	or upper-division	or upper-division
laboratory	laboratory	laboratory
Elective/Research <sup>5</sup>	Elective/Research	Elective/Research
<b>Senior</b>		
Bio. Sci. Core	Bio. Sci. Satellite	Bio. Sci. Satellite
Bio. Sci. Satellite	or upper-division	or upper-division
or upper-division	laboratory	laboratory
laboratory	Research	Research
Elective	Electives	Electives

<sup>1</sup> Students may replace Humanities 1A-B-C with its alternative 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.

<sup>2</sup> Students may take Chemistry 52A-B-C, 52LA-LB instead of 51A-B-C, 51LA-LB.

<sup>3</sup> Biological Sciences 100L may be taken concurrently or upon completion of Biological Sciences 98. It must be completed prior to taking the three required upper-division laboratories.

<sup>4</sup> 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.

<sup>5</sup> Electives should be chosen with the following purposes in mind: UCI breadth requirements; students' own breadth; preprofessional training.

## Special Programs and Courses

### 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 per quarter in all independent study courses taken under any school or program.

### White Mountain Research Station (WMRS) Supercourse: Environmental Biology

The White Mountain Research Station Supercourse exposes and trains students in diverse approaches to solving problems about plant and animal interactions with each other, and with their environments, both pristine and human-perturbed. In this course, the Owens Valley of eastern California serves as a microcosm of natural resource exploitation, symbolic of many global systems, where a major resource (water in this instance) is collected and exported, potentially to the detriment of the source ecosystems. Students are in residence at the WMRS facility in Bishop, California, for the entire spring quarter. Research studies include both traditional natural history-based field methods, and modern laboratory-based techniques. Students enroll in three concurrent courses, worth 4 units each—Field Ecology (Biological Sciences 133), Conservation Biology (Biological Sciences 170), and Physiological Ecology (Biological Sciences 126). In addition, students enroll for 4 units of independent research and give a poster presentation at the annual Physiological Ecology meeting held at WMRS.

Call the Department of Ecology and Evolutionary Biology at (714) 824-6006 for more information.

### Howard Hughes Undergraduate Biological Sciences Minority Research and Training Program

The Howard Hughes Undergraduate Biological Sciences Minority Research and Training Program was established for underrepresented minorities and women pursuing biological and biomedical research. The program offers research exposure, faculty mentorship, access to a state-of-the-art computer laboratory, summer research internships, academic support, and networking, and provides opportunities to attend scientific conferences at other institutions. Additional information is available from the Program Office, telephone (714) 824-2363.

### 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 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.

### Minor in Global Sustainability

The interdisciplinary minor in Global Sustainability trains students to understand the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on this planet. See the Interdisciplinary Studies section of this *Catalogue* for more information.

### Education Abroad Program

Upper-division students have the opportunity to experience a different culture while making progress toward degree objectives through the Education Abroad Program (EAP). EAP is an overseas study program which operates in cooperation with host universities and colleges throughout the world. See the Center for International Education section for additional information.

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.

### 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 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; 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 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 and Life Planning 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 and Life Planning Center section for additional information. The Student Affairs Office has developed a complete career library and a close relationship with the Center in an effort to provide current, relevant career information for students.

Areas of opportunity open to those with a Bachelor of Science degree include laboratory technology, publishing, technical editing, pharmaceutical sales, and training programs in county, state, and federal agencies. The bachelor's degree is necessary to pursue studies leading to the M.S. and Ph.D. degrees.

The B.S. degree, plus short training periods, may prepare students for employment in education, medical technology (usually one year), 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 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.

Leaders in nearly all health professional schools recommend that students preparing to seek admission to their schools plan to obtain a bachelor's degree. Students who plan to enter a school of dentistry, medicine, or other areas of the health sciences may receive the required preprofessional training at UCI. This preprofessional training may be accomplished by (1) completing the major in Biological Sciences or (2) majoring in any school or department and fulfilling concurrently the specific course requirements of the dental, medical, or other professional school the student expects to attend.

Students interested in the health sciences should choose electives in the social sciences, possibly a foreign language, physical chemistry, or other specific courses required or recommended by graduate schools.

The Biological Sciences Student Affairs Office offers specialized services, for a fee, to all students applying to postgraduate professional schools in the health sciences, including a personal file containing the student's letters of recommendation, and a service of sending all recommendations for a student to professional and graduate schools.

### Student Participation

**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.

**All Students for Health.** All Students for Health (ASH) assists pre-health students in attaining their career goals through providing opportunities to learn more about health careers via workshops, field trips, and the ASH volunteer program. 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 sciences, physical sciences, and engineering at UCI. The organization has the mission of helping to recruit and to retain African-American students interested in science 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.

**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 from guest speakers and by attending workshops. The Dental Club helps students with their dental school applications and offers information on dental schools, field trips to local schools, and counseling. The Club also offers mock Dental Admission Test examinations.

**Flying Samaritans.** The Flying Samaritans of UCI is comprised of student volunteers involved in providing dental and medical care at the El Testero Clinic in Baja California. One weekend per month, members staff the clinic in Mexico and assist health professionals. Activities include taking vitals, organizing the extensive pharmacy, and translating. At UCI, activities range from fundraising to collecting clothes, food, and toys for the community of El Testero. The Flying Samaritans is dedicated to serving the community of El Testero with compassion and a commitment to excellence.

**KHA.** The Korean Health Association (KHA) was organized for pre-health students to enhance their awareness of the diversity of health education opportunities in the fields of medicine, dentistry, pharmacy, optometry, and more. 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.

**M.D. Medici Designati** is comprised of a group of dedicated ancillary health care professionals who wish to aid their community and, in doing so, gain valuable clinical experience. Its name stems from Vergil's *Aeneid*, meaning "doctors in training." The organization provides the opportunity to truly experience medicine from a different point of view. The minimum requirements for membership are attendance for at least two quarters at UCI and a minimum GPA of 3.0. Active members are EMTs, CPR instructors, medical assistants, nurses, surgical technicians, and others. The pledge class is given one academic year to become licensed. The club meets once a week, with occasional special meetings.

**MHSS.** The Medical and Health Sciences Society (MHSS) is an organization dedicated to fostering interest in the fields of medicine,

dentistry, pharmacy, optometry, and other health-related professions. It offers assistance to pre-health students in planning their undergraduate years so that they may best prepare and present themselves for future career goals. Meetings are held every other week and provide students with excellent opportunities to learn more about health issues and professional schools from a wide variety of distinguished guest speakers. In addition, MHSS stresses the importance of a supportive and interactive environment for its members through study groups and social activities.

**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.

**PUSO.** The Pilipino Pre-health Undergraduate Student Organization (PUSO) was formed to target Pilipino students in the pre-health majors. With an awareness of the need for Pilipino-American health care professionals, PUSO provides service, guidance, and support to members preparing for graduate work in health-related fields. PUSO also seeks to increase the number of culturally sensitive health care professionals in the Pilipino community as well as the community-at-large and produce role models for Pilipino-American youth.

**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.

**Women in Medicine.** Women in Medicine is a support group for women aspiring to become physicians. The focus of this group is two-fold. First, through workshops and various speakers, Women in Medicine aims to provide guidance regarding academic support in relation to the process of applying to medical schools. Second, it focuses on education regarding the political, social, and medical issues surrounding health care with a particular emphasis on women's health. With such a mission, Women in Medicine not only seeks to prepare women for a career in medicine, but more importantly, to build a community of women with similar aspirations and concerns.

## Undergraduate Courses in Biological Sciences

**1A-B Life Sciences (4-4) F, W.** Lecture, three hours. A two-quarter integrated sequence designed to introduce nonmajors to the basic concepts of modern biology. **1A:** Discussion of evolutionary biology, ecology, molecular biology, and genetics. **1B:** Cell and behavioral biology including plant structure and function, photosynthesis, and animal physiology. Prerequisite for 1B: Biological Sciences 1A. (II)

**1C Topics in Life Sciences for Nonmajors (4) F, W, S.** Lecture, three hours. Studies in selected areas of life sciences specifically intended for students not majoring in the Biological Sciences. Topics may include physiology, molecular biology, introduction to ecology, human development, molecular basis of human disease, the meaning of evolution, how the brain works, the brain and human behavior, or the biology of behavior disorder. Prerequisite: Biological Sciences 1B. May be taken for credit four times as topics vary. Same as Environmental Analysis and Design E6 when topic is Introduction to Ecology. (II)

**1D Topics in Life Sciences (4) F, W, S.** Lecture, three hours. Studies in selected areas of life sciences for both majors and nonmajors. Topics may include botany, California natural history, AIDS fundamentals, civilization and disease, or biological conservation. Prerequisite for nonmajors: Biological

Sciences 1B. May be taken two times for credit as topics vary. Same as Psychology and Social Behavior P45 and Environmental Analysis and Design E45U when topic is AIDS Fundamentals. (II)

**11 Topics in Biological Sciences (2 to 4) F, W, S.** Studies in selected areas of biological sciences. May be taken for credit three times as topics vary.

**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.

**46 Discussion and Literature Research in AIDS (2 to 4) F.** Discussion, two hours; research, two hours. Students carry out two activities: (1) leading discussions about HIV/AIDS (predominantly regarding sociological and personal reactions) among students taking Biological Sciences 1D when the topic is AIDS Fundamentals; and (2) literature research about biomedical aspects of AIDS. Prerequisite: Biological Sciences 1D when topic is AIDS Fundamentals or Psychology and Social Behavior P45 or Environmental Analysis and Design E45U; consent of instructor.

**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.

**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, Mathematics H90A-B-C, and Physics H90A-B-C. (II)

## SEMINARS, SPECIAL COURSES, AND INDEPENDENT STUDY

### Seminars

**2A Freshman Seminars (1).** Lecture, one hour; seminar, one hour. Weekly meetings consisting of presentations by faculty, professional staff, and New Student Peer Academic Advisors provide information about the School of Biological Sciences, campus resources, and special programs/opportunities. Pass/Not Pass Only. Open to freshman Biological Sciences majors only.

**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 (1).** Lecture, one hour; seminar, one hour. Weekly meetings consisting of presentations by faculty, professional staff, and New Student Peer Academic Advisors provide information about the School of Biological Sciences, campus resources, and special programs/opportunities. Pass/Not Pass Only. Open to new transfer students only.

### Special Courses

**92 Special Group Activities F, W, S.** Formerly Biological Sciences 98.

#### 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. Passing contingent on completion of minimum specified hours with satisfactory evaluation. Fields include optometry, veterinary and human medicine, and allied health. Pass/Not Pass Only. Prerequisites: consent of instructor and minimum third-quarter freshman standing. May be repeated.

**Sec. 1B Health Sciences Experience, Dentistry (0).** Description same as Sec. 1A. Pass/Not Pass Only. Prerequisites: consent of instructor and minimum third-quarter freshman standing. May be repeated.

**Sec. 2 Tutoring in Biological Sciences (2 to 4).** Students may enroll in this course to earn credit for tutoring in Biological Sciences Core courses. 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 upper-division 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.

**192 Excellence in Research in the Biological Sciences (2).** Adjunct to the third quarter of Biological Sciences 199 for students participating in the School of Biological Sciences' Excellence in Research program. Corequisite: Biological Sciences 199. Prerequisites: two quarters of Biological Sciences 199; 2.7 minimum grade point average. May be repeated for credit as topics vary. Biological Sciences 192 and 192X may not both be taken for credit.

**192X Excellence in Research/Writing (2).** Adjunct to the third quarter of Biological Sciences 199 for students participating in the School of Biological Sciences' Excellence in Research program who wish to receive credit for the upper-division writing requirement. Corequisite: Biological Sciences 199. Prerequisites: two quarters of Biological Sciences 199; 2.7 minimum grade point average; satisfactory completion of the lower-division writing requirement. Biological Sciences 192 and 192X may not both be taken for credit.

**193 Research Writing for Biological Science Majors (4).** Under the guidance of selected faculty in the School of Biological Sciences and a writing professional, students learn to conduct library research in the field of biology and to write scientific review papers. Prerequisite: upper-division Biological Sciences major.

**195 Communication in the Biological Sciences (4).** Lecture, three hours. An examination of rhetorical strategies of both written and oral forms of communications used in the Biological Sciences. Students have extensive opportunity to practice making both written and oral presentations. The final project is a research paper based on work in independent study (Biological Sciences 199). Prerequisites: Biological Sciences 199A and concurrent enrollment in 199B with the intention of participation in Excellence in Research during spring quarter.

**196 Writing for Biology Research (4) S.** Lecture, two hours; laboratory, two hours. A writing course for the Howard Hughes Fellows who have completed two quarters of Biological Sciences 199 research. Students will work in the computer lab and be instructed on the preparation and publication of a

scientific paper. Prerequisites: two quarters of Biological Sciences 199 research in the laboratory. Restriction: Howard Hughes Fellows.

**198 Teaching Methods/Practicum for Undergraduates (4) F, W, S.** Undergraduates interested in biology teaching experience serve as apprentice instructors in sections of the Experimental Biology Laboratory (100L). Students attend a weekly seminar on teaching methods and a weekly session to prepare for the week's laboratory/discussion topics. Pass/Not Pass only. Prerequisites: Biological Sciences 94, 96, 97, 98, 99, 100L and upper division standing. May be taken for credit three times.

NOTE: Information about the White Mountain Research Station Supercourse is available on page 122.

### 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 94, 96, 97, 98, 99, 100L, 108, 109, and 110 are required of all Biological Sciences majors. Lecture classes are three hours per week. Prerequisites listed for Core courses are rigorously enforced. (Transfer students who have successfully completed one or more years of college biology should consult with the Biological Sciences Student Affairs Office for possible exemption from portions of the Core.)

**94 Diversity of Life (4) W.** Lecture, three hours. Types of living organisms with an introduction to systematics and classification. Evolutionary aspects are stressed. Prerequisite: concurrent enrollment in or completion of Chemistry 1A.

**96 Ecology (4) S.** 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. Prerequisite: Biological Sciences 94.

**97 General and Evolutionary Genetics (4) F, W.** 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. Prerequisite: Biological Sciences 96.

**98 Biochemistry (4) F, W, S.** Lecture. Structure and properties of proteins; major biochemical pathways and mechanisms for their control. Prerequisites: completion of Biological Sciences 97 and completion of or concurrent enrollment in Chemistry 51B or 52B.

**99 Molecular Biology (4) F, 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 98.

**100L Experimental Biology Laboratory (3) F, W, S.** Basic experimental design, laboratory techniques, data gathering skills, and analysis and preservation of data for a variety of areas of inquiry in the biological sciences. Prerequisite: current enrollment in or completion of Biological Sciences 98. *First offered, winter 1997.*

**108 Developmental and Cell Biology (4) F, W.** 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 99.

**109 Physiology (5) F, W.** Lecture. 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 110. Prerequisite: Biological Sciences 99.

**110 Psychobiology (4) W, S.** Lecture. Evolution of behavior, including ethological and psychological aspects and analysis of neuroanatomical, neurochemical, neurophysiological, and neuroendocrine systems underlying basic behavioral processes. Prerequisites: Biological Sciences 99 and completion of or concurrent enrollment in Physics 3B or 5C.

### UPPER-DIVISION LABORATORIES

Upon completion of Biological Sciences 100L, Biological Sciences majors are required to take three of the following upper-division laboratories. Students who choose to complete a specialization must take the core laboratory indicated in the list which appears in the degree requirements section.

Students who receive Excellence in Research in the School of Biological Sciences may also receive credit, by petition, for one upper-division laboratory in the specialization area of the sponsoring faculty member.

**111L Developmental and Cell Biology Laboratory (3) F, W, S.** Laboratory, four hours. Prerequisite: Biological Sciences 100L and concurrent enrollment in or completion of Biological Sciences 108.

**112L Physiology Laboratory (3) F, W, S.** Laboratory, four hours. Prerequisite: Biological Sciences 100L and concurrent enrollment in or completion of Biological Sciences 109.

**113L Psychobiology Laboratory (3) F, S.** Laboratory, four hours. Prerequisite: Biological Sciences 100L and concurrent enrollment in or completion of Biological Sciences 110.

**114L Biochemistry Laboratory (3) F, W, S.** Laboratory, four hours. Properties of enzymes and the culture and isolation of mutants of microorganisms. Prerequisite: Biological Sciences 100L and completion of or concurrent enrollment in Biological Sciences 98.

**115L Evolution Laboratory (4) S.** Laboratory, seven hours. Students perform experiments which illustrate important concepts in evolutionary biology such as natural selection, random genetic drift, inbreeding, age-specific selection, sexual selection, and phylogenetic reconstruction. Prerequisite: Biological Sciences 97 and 100L.

**122L General Microbiology Laboratory (4) S, 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: Biological Sciences 100L and concurrent enrollment in Biological Sciences 122 and consent of instructor.

**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. Prerequisites: Biological Sciences 94 and 100L; completion of or concurrent enrollment in 96; consent of instructor.

### SATELLITE COURSES

**117 Behavioral Neuroscience Theory (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. Formerly Biological Sciences 108.

**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; how our activities are affecting these cycles. How and why indicator organisms are used in the determination of water quality for public health. Prerequisites: a general course in the Biological Sciences Core curriculum. Same as Environmental Analysis and Design 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: a general course in the Biological Sciences Core curriculum and completion of or concurrent enrollment in Biological Sciences 118. Same as Environmental Analysis and Design E160L.
- 119 The Chemical Components of Water Quality (4)** F. 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 Environmental Analysis and Design E5 and E8 or a general course in the Biological Sciences Core Curriculum. Same as Environmental Analysis and Design E162.
- 120 Neurobiology of Alcohol (4)** S. Lecture, two hours; discussion, one hour. Alcohol (ethanol) metabolism, CNS depression, nature and developing brain, neuropharmacology, drug interactions, immune system, alcohol-related birth defects, neuroteratogen, role in AIDS/pediatric AIDS; gender, ethnic, and special population differences. Discussion on biological socio/psychological aspects. Prerequisite: Biological Sciences 98.
- 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 98 or consent of instructor.
- 122 General Microbiology (4)** S, Summer. Lecture, three hours; discussion, one hour. Comparative metabolism of small molecules and cell structure and relationship to microbial classification. Macromolecule synthesis and regulation, sporulation, cell division, growth, and effect of antibiotics. Prerequisite: Biological Sciences 98.
- 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. Prerequisites: Biological Sciences 99 and consent of instructor.
- 123X Writing/Computer Applications in Molecular Biology (2)** S. Adjunct to Biological Sciences 123. Individual instruction in writing about topics drawn from the material covered in Biological Sciences 123. Satisfies the upper-division writing requirement with a grade of C or better. Corequisite: Biological Sciences 123. Prerequisites: Biological Sciences 99 and consent of instructor; satisfactory completion of the lower-division writing requirement.
- 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 98.
- 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 99 or consent of instructor.
- 126 Physiological Ecology (4)** S. An examination of the functional means by which animals and plants cope with their environments, the physiological limits that determine the boundary conditions of various ecological riches. Unifying principles that describe the regulatory features of all animals or plants emphasized. May be taken only as part of the White Mountain Research Supercourse. Corequisites: Biological Sciences 133, 170, 199. Prerequisite: consent of instructor.
- 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 98; Biological Sciences 99 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. Prerequisite: Biological Sciences 91, 94, 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 108 and Physics 3A-B-C or equivalent.
- 131 Topics in Molecular Biology and Biochemistry (2 to 4)** F, W, S. Studies in selected areas of molecular biology and biochemistry. Prerequisite: Biological Sciences 98 or consent of instructor. May be taken for credit three times as topics vary.
- 132 Muscles and Movement (4)** W. Lecture, three hours. Structure and function of muscle, from molecular mechanisms of movement through mechanical power output, efficiency, and the effects of training on muscle size and performance. Prerequisite: concurrent enrollment in or completion of Biological Sciences 109.
- 133 Field Ecology (4)** S. Designed to instruct and demonstrate to students the value and approaches of experimental field research using the hypothetico-deductive experimental approach. May be taken only as part of the White Mountain Research Supercourse. Corequisites: Biological Sciences 126, 170, 199. 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 1D when topic is Botany or consent of instructor.
- 134X Writing/Plant Physiology (2)** S. Adjunct to Biological Sciences 134. Individual instruction in writing about topics drawn from the material covered in Biological Sciences 134. Satisfies the upper-division writing requirement with a grade of C or better. Corequisite: Biological Sciences 134. Prerequisites: Biological Sciences 108, consent of instructor, and satisfactory completion of the lower-division writing requirement.
- 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 108. Biological Sciences 136 and 148 may not both be taken for credit.
- 137 Genetics**
- 137A Microbial Genetics (4)** W. Lecture, four hours. Prerequisites: Biological Sciences 97 and 98. Recommended: concurrent enrollment in Biological Sciences 99.
- 137B Eukaryotic and Human Genetics (4)** F. Lecture, four hours. Structure and function of genes in eukaryotes with emphasis on special problems of genetic studies in humans. Molecular methods of genetic analysis and gene transfer are discussed. Practical applications and ethical and social issues raised by genetic studies are addressed. Prerequisite: Biological Sciences 97. Recommended: Biological Sciences 99.
- 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 109.
- 138X Writing/Comparative Animal Physiology (2)** S. Individual instruction in writing about topics drawn from the material covered in Biological Sciences 138. Satisfies the upper-division writing requirement with a grade of C or better. Corequisite: Biological Sciences 138. Prerequisites: Biological Sciences 109 and consent of instructor; satisfactory completion of the lower-division writing requirement.
- 139 Topics in Developmental and Cell Biology (2 to 4)** F, W, S. Studies in selected areas of developmental and cell biology. Prerequisites: Biological Sciences 108; limited to School of Biological Sciences majors with upper-division standing. May be taken for credit three times as topics vary.



**140 Macromolecular Structure, Function, and Interaction (4) F.** Lecture, three hours; discussion, one hour. Chemistry of macromolecules; emphasis on proteins. Physical and chemical properties of proteins, forces that maintain protein structure, relationship between structure and function, interactions of proteins with ligands and other macromolecules, and experimental methods to study structure, function, and interactions. Corequisite: Chemistry 130A or 131A. Prerequisites: Biological Sciences 98 and 99. Concurrent with Molecular Biology 240.

**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. Prerequisites: Biological Sciences 108 and Chemistry 51A or 52A.

**142 Topics in Philosophy of Biology (4) F, W, or S.** Lecture, three hours. Selected topics in the philosophy of biology, e.g., scientific method in biology, the structure of evolutionary theory, teleology, ethics, and evolution. Philosophy 40 recommended as background. Same as Philosophy 142. May be repeated for credit as topics vary.

**143 Human Parasitology (4) S.** Lecture, three hours. Introduction to human-animal parasitic diseases including worm and protozoan infections. Prerequisite: Biological Sciences 109 or consent of instructor.

**143X Writing/Human Parasitology (2) S.** Adjunct to Biological Sciences 143. Individual instruction in writing about topics drawn from the material covered in Biological Sciences 143. Satisfies the upper-division writing requirement with a grade of C or better. Corequisite: Biological Sciences 143. Prerequisites: Biological Sciences 109 and consent of instructor; satisfactory completion of the lower-division writing requirement.

**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 108.

**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 108.

**144C Plant Cell Biology (4) 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 108 and 109.

**144X Writing/Plant Molecular Biology (2) S.** Adjunct to Biological Sciences 144C. Individual instruction in writing about topics drawn from material covered in Biological Sciences 144C. Satisfies upper-division writing requirement with a grade of C or better. Corequisite: Biological Sciences 144C. Prerequisite: Biological Sciences 108 and consent of instructor; satisfactory completion of the lower-division writing requirement.

**145A Gene Expression and Its Regulation in Eukaryotic Cells (4) W of every even year.** 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, multigene families, oncogenes, gene transposition, and recombinant gene cloning. Prerequisite: Biological Sciences 99.

**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. Prerequisite: Biological Sciences 108.

**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 Plant Molecular Biology (4) W.** Lecture, three hours. Presents the molecular mechanisms of plant growth and development. Topics considered include: the identification of genes regulating cell division, growth, and morphogenesis; control of gene expression by external and internal factors; plant transformation mechanisms. Prerequisite: Biological Sciences 108.

**148 Developmental Biology of Vertebrates (4) S.** Lecture, three hours; optional discussion, one hour. Introduction to animal developmental biology, with an emphasis on vertebrates. Topics include reproduction, early development, pattern formation, organogenesis, regeneration. Prerequisite: Biological Sciences 108. Biological Sciences 136 and 148 may not both be taken for credit.

**148X Writing/Vertebrate Embryology (2) S.** Individual instruction in writing about topics drawn from the material covered in Biological Sciences 148. Satisfies the upper-division writing breadth requirement with a grade of C or better. Corequisite: Biological Sciences 148. Prerequisites: Biological Sciences 108, consent of instructor, and satisfactory completion of the lower-division writing requirement.

**149 Development of the Nervous System (4) F.** Lecture, three hours. Neurogenesis, cell migration, and environmental interactions from embryogenesis to late maturation with emphasis on vertebrates. Prerequisite: Biological Sciences 110.

**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. Prerequisite: Biological Sciences 97.

**150X Writing/Conservation Biology (2).** Adjunct to Biological Sciences 150. Individual instruction in writing about topics drawn from the material covered in Biological Sciences 150. Satisfies the upper-division writing breadth requirement with a grade of C or better. Corequisite: Biological Sciences 150. Prerequisites: Biological Sciences 97, consent of instructor, and satisfactory completion of the lower-division writing requirement.

**151 Structure and Function of Eukaryotic 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 99.

**151X Writing/Structure and Function of Eukaryotic Chromosomes (2).** Adjunct to Biological Sciences 151. Individual instruction in writing about topics drawn from the material covered in Biological Sciences 151. Satisfies the upper-division writing breadth requirement with a grade of C or better. Corequisite: Biological Sciences 151. Prerequisites: Biological Sciences 99, consent of instructor, and satisfactory completion of the lower-division writing requirement.

**152 Topics in Psychobiology (4) F, W, S.** Lecture, three hours. Studies in selected areas of psychobiology. Prerequisite: Biological Sciences 98 or consent of instructor. May be taken for credit three times as topics vary.

**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 110 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. Prerequisites: Biological Sciences 99 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 110 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 110.

**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 108 or 109.

**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. Prerequisite: Biological Sciences 1C when topic is Brain and Behavior, or Biological Sciences 110, 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 110 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. Development, focusing on hemispheric specialization and plasticity; localization of specific linguistic functions in adults, with emphasis on study of aphasia; relation of linguistic capacity to general cognitive capacity, considering research on retardation. Prerequisite: Biological Sciences 1C when topic is Brain and Behavior, or Biological Sciences 110, 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 110.

**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 110 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 110.

**164 Neuroanatomy (4) S of odd years.** Lecture and discussion, three hours. Introduction to comparative neuroanatomy, emphasizing mammalian central nervous system. Prerequisite: Biological Sciences 110.

**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 1C when topic is Brain and Behavior, or Biological Sciences 110.

**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 neutral theory of evolution, the evolution of sex, life-history evolution, coevolution, speciation, and mass extinctions. Prerequisite: Biological Sciences 97.

**169 Topics in Ecology and Evolutionary Biology (2 to 4) F, W, S.** Studies in selected areas of Ecology and Evolutionary Biology. Prerequisite: Biological Sciences 97 or consent of instructor. May be taken for credit three times as topics vary.

**170 Applied Conservation Biology (4) S.** Designed to introduce students to the complexities and realities of natural resource exploitation and preservation, emphasizing the trade-offs between economic benefits and ecosystem stability and sustainability. May be taken only as part of the White Mountain Research Supercourse. Corequisites: Biological Sciences 126, 133, 199. Prerequisite: consent of instructor.

**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 99 or 110 and consent of instructor.

**172 Systematics and Evolution of Flowering Plants (5) S of even years.** Lecture, four hours; laboratory, three hours, three 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 94, 96, 97.

**173 Comparative Biochemistry (4) W of even years.** Lecture, three hours. Subcellular mechanisms of adaptation to extreme environments: temperature,

pressure, osmotic stress, hypoxia. Protein structure and function differences, membrane properties, cellular homeostasis. Evolution of metabolic responses to environmental stress. Prerequisite: Biological Sciences 109.

**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 96 or consent of instructor.

**175 Restoration Ecology (4) F.** Lecture, two hours; field, two hours. Theoretical and practical aspects of habitat restoration and mitigation. Design, implementation, and monitoring of restoration projects in local habitats. Collection of seed and cuttings, planting and maintenance presented. Control of exotics in natural areas discussed. Environmental ethics of restoration emphasized. Prerequisite: Biological Sciences 96. Same as Environmental Analysis and Design E174.

**176 Coevolution of Hosts and Parasites (4) S of odd years.** Lecture, three hours; discussion, one hour. Ecology and evolution of host-parasite relationships. Ecological factors that influence the spread of disease, genetics of resistance and virulence, and significance of cellular parasites in genomic evolution. Emphasis on conceptual issues with examples from many different organisms. Prerequisites: Biological Sciences 96 and 97.

**178 Ocean Ecology (4) W of even years.** Examines the relationships between physical processes in the ocean, biological productivity, and the exploitation of ocean resources by high-trophic-level predators, including humans. Discusses open ocean ecosystems, intertidal and benthic regions of the world ocean. Prerequisite: Biological Sciences 96.

**179 Limnology and Freshwater Biology (4) F of odd years.** 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 96 or consent of instructor. Same as Environmental Analysis and Design E173.

**179L Limnology and Freshwater Biology Laboratory (4) W.** Analytical techniques for common water-quality variables of lakes, streams, rivers. Benthic fauna, vertebrates and invertebrates, algae, and aquatic plants. Emphasis on field methods with an experimental approach; laboratory exercises. Week-end field trips to estuaries, marshes, lakes, and streams. Prerequisite: concurrent or previous enrollment in Biological Sciences 179. Same as Environmental Analysis and Design E173L.

**180 Fractal Geometry in Biology (4) F.** Lecture, two hours; discussion, one hour. Fractal geometry explored with tools and interests of the biologist. Provides a general background of fractal geometry and investigates the types of biological processes that generate fractals. Prerequisites: completion of the Biological Sciences Core, Physics 3A, and Mathematics 2B.

**181 Conservation in the American West (4) W of odd years.** Critical examination of contemporary conservation issues in the American west, with particular attention to water in California, grazing on public lands, and species decline and extinctions. Prerequisite: Biological Sciences 96.

**183 The Comparative Physiology of Exercise (4) F of even years.** Lecture, three hours. Focus upon critical topics in the area of exercise biology using the comparative physiological approach. Specifically examine the physiological factors that limit the capacity of an organism to sustain high levels of aerobic metabolism. Prerequisites: Biological Sciences 98, 108, 109.

**184 Entomology (4) F of even years.** Lecture, two hours; laboratory, four hours. 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 96.

**185 Plant-Animal Interactions (4) W of even years.** Lecture, two hours; laboratory, four hours. Ecology and evolution of mutualistic and antagonistic interactions between plants and animals. Topics include pollinator behavior, plant reproductive systems, plant defense mechanisms, and herbivore diet choice. Field-oriented laboratory. Prerequisites: Biological Sciences 96, 97.

**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 96.

**187 Advanced Developmental Genetics (2) W of odd years.** Lecture, one and one-half hours. Advanced course on the use of genetic analysis to identify the genes that control cell behavior and development. Instructor-led discussion of genetics and the relationship between genotype and phenotype followed by student-led discussion based on assigned readings. Prerequisite: Biological Sciences 137B.

**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. Prerequisites: Biological Sciences 108 and 109.

**189 Fish Physiology (4) S of odd years.** Lecture, three hours. Functional and evolutionary physiology of fishes. Locomotion, respiration, circulation, osmoregulation, thermal biology, sensory biology. Emphasis on environmental factors affecting physiological processes. Prerequisite: Biological Sciences 109.

**191A-B-C Senior Seminar on Global Sustainability I, II, III (2-2-4) F, W, S.** Students attend weekly seminar to discuss current issues in global sustainability. Weekly attendance at Global Sustainability Forum also is required. Seminar utilized to analyze forum presentations and to prepare senior research paper. **A:** Prepare bibliography. **B:** Prepare research proposal. **C:** Prepare/write research paper under the direction of a faculty member. In Progress grading for 191A-B; grade for sequence given upon completion of 191C. Prerequisites: senior standing, Biological Sciences 1D when topic is Biological Conservation, Environmental Analysis and Design E20, and Earth System Science 10. Same as Earth System Science 190A-B-C and Social Ecology 186A-B-C.

## GRADUATE STUDY IN BIOLOGICAL SCIENCES

The School of Biological Sciences offers graduate study in a wide variety of fields ranging across the spectrum of the biological sciences. The four Departments of the School of Biological Sciences (Developmental and Cell Biology, Ecology and Evolutionary Biology, Molecular Biology and Biochemistry, and Psychobiology) and four basic science Departments of the College of Medicine (Anatomy and Neurobiology, Biological Chemistry, Microbiology and Molecular Genetics, and Physiology and Biophysics), representing respective concentrations of study under the Ph.D. degree in Biological Sciences, cooperate in the conduct of graduate education administered by the School of Biological Sciences. Although all programs admit students for study leading to the Doctor of Philosophy (Ph.D.) degree, the Master of Science (M.S.) degree may be earned in pursuit of the Ph.D. Each department has a graduate advisor whom students may consult in regard to the technical details of the individual programs.

Applications for admission to graduate study are evaluated by the department or program to which the student has applied on the basis of letters of recommendation, Graduate Record Examination scores, grades, and other relevant qualifications of the applicant. Candidates for graduate admission are urged to consult the particular department or program whose faculty and expertise best fit their interests and background.

### MASTER OF SCIENCE AND DOCTOR OF PHILOSOPHY IN THE BIOLOGICAL SCIENCES

While both the Master of Science and Doctor of Philosophy programs are offered, emphasis at the graduate level is on the Ph.D. programs. 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 they are accepted into that program. Students are encouraged to consult with other faculty members with regard to their research and academic interests.

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 School, on behalf of the Dean of Graduate Studies and the Graduate Council.

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.

Graduate student status or consent of instructor is a prerequisite for all 200-299 courses.

## INTERDISCIPLINARY GRADUATE PROGRAMS

The School is structured in a manner that encourages an interdisciplinary approach to scientific problems. Interaction and cooperative efforts across traditional institutional boundaries are especially evident in the School's participation in various organized research units (described in the previous Research and Graduate Studies section) and in two interdepartmental/interschool graduate programs described below.

## Graduate Program in Molecular Biology, Genetics, and Biochemistry

145 Biological Sciences Administration; (714) 824-8145

E-mail: gp-mbgb@uci.edu

World Wide Web: <http://www.bio.uci.edu/>

Rozanne M. Sandri-Goldin, **Director**

### Faculty

Nancy L. Allbritton: Signal transduction by second messengers and protein kinases

Joseph Arditti: Developmental physiology of orchids

Stuart M. Arfin: Protein processing and turnover; functions of ubiquitin

Kavita Arora: *Drosophila* development; TGF- $\beta$  signal transduction; cell signaling

Dana W. Aswad: Regulation of protein function by covalent modification

Kenneth M. Baldwin: Activity and hormonal factors regulating striated muscle plasticity

Michael W. Berns: Laser microsurgery of cells, embryos, and tissues

Hans R. Bode: Pattern formation and stem cell differentiation

Ralph A. Bradshaw: Growth factor action; signal transduction; protein processing

Peter J. Bryant: Tumor-suppressor genes of *Drosophila* and humans

Susan V. Bryant: Molecular basis of limb development and regeneration

Barbara K. Burgess: Structure and function of protein-bound [FeS] and [MoFeS] clusters

Michael D. Cahalan: Ion channels in the nervous and immune systems

Vince Caiozzo: Sarcomeric gene expression; contractile function; skeletal muscle plasticity

Anne L. Calof: Molecular mechanisms of neurogenesis, neuronal differentiation, and cell death

Richard D. Campbell: Morphogenesis; biology of *Hydra*; fractal geometry of biological forms

K. George Chandy: Molecular biology and structure of ion channels; novel therapeutic agents

Ken W.-Y. Cho: Molecular mechanisms of axis specification in *Xenopus*

Michael G. Cumsy: Mitochondrial protein import; regulation of gene expression in yeast

Dennis D. Cunningham: Proteases and protease nexins: regulation of neural cells

Rowland H. Davis: Regulation of polyamine metabolism in *Neurospora crassa*

Ellie Ehrenfeld: Replication and host interactions of poliovirus and hepatitis A

Hung Fan: Molecular biology and pathogenesis of mouse and human retroviruses

Donald E. Fosket: Regulation of cytoskeleton formation and function

J. Jay Gargus: Molecular analysis of membrane signaling proteins

Charles G. Glabe: Amyloid A $\beta$  peptide in Alzheimer's pathogenesis; gamete recognition

Alan L. Goldin: Molecular analysis of ion channel function

Gale A. Granger: Immunology and pathogenesis: Cell-mediated immunity; tumor immunology; cytokine action

Chris L. Greer: RNA processing and nuclear export; tRNA gene expression

George A. Gutman: Potassium channel and immunoglobulin super-family genes

Harry T. Haigler: Growth factor signal transduction; annexin calcium-binding proteins

James E. Hall: Biophysics of membrane channels

Barbara A. Hamkalo: Molecular basis of differential chromatin condensation

G. Wesley Hatfield: Effects of DNA topology on transcription

Agnes Henschen: Protein structure, function, post-translational modification; fibrinogen

Franz Hoffmann: Regeneration of cultured plant cells; somatic cell genetics

Christopher C.W. Hughes: Endothelial cells as initiators and targets of immune responses

Anthony A. James: Malaria parasite development; genetic manipulation of insect vectors

Edward G. Jones: Structure, function, and development of the thalamus and cerebral cortex

Daniel J. Knauer: Human antithrombins and related serine protease inhibitors

Murray Korc: Growth factor/receptor expression; signaling pathways in cancer

Stuart M. Krassner: Developmental transitions of hemoflagellates

Arthur D. Lander: Molecular mechanisms of cell and axon guidance; proteoglycans

Janos K. Lanyi: Structure and function in bacterial rhodopsins

W. Ian Lipkin: Borna disease and neurotropic viruses; CNS delivery systems

Haoping Liu: MAP kinase signal transduction; dimorphic regulation in yeast

Kenneth J. Longmuir: Lipid metabolism; liposomes; membrane fusion

Jerry E. Manning: Major surface proteins and their genes in *Trypanosoma cruzi*

J. Lawrence Marsh: Molecular genetics of development in *Drosophila* and humans

Calvin S. McLaughlin: Macromolecule biosynthesis; control of cell division

Ronald L. Meyer: Development of nerve connections, nerve injury and regeneration

Ricardo Miledi: Neurotransmitter receptors and synaptic functions

R. Michael Mulligan: RNA editing in plant mitochondria and chloroplasts

Masayasu Nomura: RNA polymerase I; nuclear transport and function

Diane K. O'Dowd: Electrical excitability and synaptic connectivity during development

Michael B. O'Connor: Control of gene expression and cell-cell communication in development

Timothy F. Osborne: Transcriptional regulation of cholesterol biosynthesis

Thomas L. Poulos: Protein engineering and crystallography

W. Edward Robinson: Humoral immune responses in pathogenesis of HIV and SIV infections

Hamid M. Said: Cellular and molecular aspects of intestinal transport of vitamins

Suzanne B. Sandmeyer: Molecular genetics of a position-specific yeast retrovirus-like element

Rozanne M. Sandri-Goldin: Regulatory functions of a post-transcriptionally acting herpes virus protein

Michael E. Selsted: Host defense systems in phagocytic leukocytes and mucosal epithelium

Bert L. Semler: Replication of picornavirus RNAs; RNA-protein and protein-protein interactions

Donald F. Sear: Interactions of proteins and DNA in transcriptional regulation

Martin A. Smith: Synaptogenesis: regulation of gene expression and RNA splicing

Ivan Soltesz: Function and modulation of synaptic GABA<sub>A</sub> receptor

Eric J. Stanbridge: Tumor suppressor genes and oncogenes in human cancer

Robert E. Steele: Molecular biology of *Hydra* development

Donald F. Summers: Molecular biology of hepatitis A virus replication

Andrea J. Tenner: Molecular basis of the enrichment of human leukocyte function

Krishna K. Tewari: Chloroplast DNA: replication and transcription

Sujata Tewari: Neuromolecular mechanisms of alcohol/drug action on the CNS

Bruce J. Tromberg: Optical spectroscopy in cells and tissues

Larry E. Vickery: Metalloproteins; steroid hormone biosynthesis and receptors; molecular chaperones

Luis P. Villarreal: Tissue-specific viral and cellular gene expression; viral vectors

Edward K. Wagner: Herpes simplex virus gene expression during productive and latent infection

Marian L. Waterman: Regulation of transcription in human T lymphocytes

Stephen H. White: Protein folding in membranes

The graduate program in Molecular Biology, Genetics, and Biochemistry (MBGB) brings together more than 80 faculty from the Departments of Biological Chemistry, Developmental and Cell Biology, Microbiology and Molecular Genetics, Molecular Biology and Biochemistry, and Physiology and Biophysics. Each department administers a graduate concentration in association with the MBGB program, which leads to the Ph.D. degree in Biological Sciences. The MBGB program is designed to offer students a unified curriculum, broad training, and a wide range of research opportunities in the following areas: cancer biology, cell biology, developmental biology, genetics, immunology and pathogenesis, mechanisms of gene expression, molecular neurobiology, molecular physiology and biophysics, structural biology/protein engineering, and virology. The goal of the combined program is to produce creative and productive scientists who have an in-depth comprehension in a given subspecialty.

During the five years established as the normative time for completing the Ph.D. degree, students complete the MBGB program

requirements during their first two years, and in the remaining three years, complete the requirements of one of the five affiliated concentrations. In the first year of study, emphasis is placed on immediate research participation supported by formal course work in protein and nucleic acid biochemistry, cell biology, and gene expression, and one genetics course. At the end of the first year, student competence and critical thinking in the molecular aspects of biological sciences are tested through a comprehensive preliminary examination and overall evaluation. Selection of an advisor from among the more than 80 laboratories usually occurs prior to the preliminary examination. Regular teaching of undergraduates is part of graduate student training in the second year of study. At this time, students also begin to lay the experimental foundation for their dissertation project proposal. During the second year and beyond, students participate in the departmental journal club and seminar series of the department in which they have elected to carry out their dissertation work, as specified by the concentration requirements. In years three and beyond, students fulfill departmental requirements for the Ph.D. Further information is available in the *Catalogue* sections of the participating departments and through the MBGB program office in the Biological Sciences Administration building.

Applicants should have significant laboratory experience and be well-prepared in calculus, physics, organic chemistry, and biochemistry.

## Graduate Program in Protein Engineering

145 Biological Sciences Administration; (714) 824-6686

E-mail: [protengr@uci.edu](mailto:protengr@uci.edu)

World Wide Web: <http://www.bio.uci.edu/>

Larry E. Vickery, **Director**

### Faculty

Dana W. Aswad: Regulation of protein function by covalent modification

Ralph A. Bradshaw: Growth factor action; signal transduction; protein processing

Barbara K. Burgess: Structure and function of protein-bound [FeS] and [MoFeS] clusters

Richard Chamberlin: Site-directed mutagenesis with non-natural amino acids

Nancy A. DaSilva: Improvement of cell and enzyme-mediated processes via molecular genetics

Charles G. Glabe: Amyloid A $\beta$  peptide in Alzheimer's pathogenesis; gamete recognition

Agnes H. Henschen-Edman: Protein structure, function, post-translational modification; fibrinogen

Janos K. Lanyi: Structure and function in bacterial rhodopsins

James S. Nowick: Study of protein structure in synthetic chemical model systems

Thomas L. Poulos: Protein engineering and crystallography

Michael E. Selsted: Host defense systems in phagocytic leukocytes and mucosal epithelium

Donald F. Seneac: Interactions of proteins and DNA in transcriptional regulation

Athan J. Shaka: New techniques in high-resolution multi-dimensional NMR

Larry E. Vickery: Metalloproteins; steroid hormone biosynthesis and receptors; molecular chaperones

Stephen H. White: Protein folding in membranes

Thomas K. Wood: Expression of oxygenases in foreign hosts for bioremediation

The new discipline of protein engineering has emerged, combining biochemistry, physical and organic chemistry, recombinant DNA technology, structural biology, and biochemical engineering. This has provided new approaches to the basic study of protein structure and function, as well as the opportunity to design and produce proteins with a broad spectrum of industrial and health-related applications. The School of Biological Sciences, in conjunction with the Department of Chemistry in the School of Physical Sciences and the Department of Chemical and Biochemical Engineering in the School of Engineering, offer an interdisciplinary graduate program

leading to the Ph.D. in Biological Sciences, Chemistry, or Engineering with a concentration in Protein Engineering Science. The program brings together faculty with research interests in: structure/function of enzymes, metalloproteins, receptors, and growth factors; protein folding and design; bioremediation; protein modification with non-natural amino acids; NMR spectroscopy; and X-ray crystallography.

Upon entrance to the program, students choose a Protein Engineering curriculum leading to one of the three degrees. First-year students take courses in molecular biology and protein chemistry, structure, and engineering, and complete three laboratory rotations of their choice. Additional elective courses, current literature seminars, and research presentations are used to broaden training in subsequent years. A qualifying examination is administered at the end of the first year for students in the Schools of Biological Sciences and Engineering. For students in Chemistry, a written examination is administered early in the second year. Students are then expected to select a laboratory and begin work toward completion of a Ph.D. dissertation based upon their own original research. Students advance to candidacy for the Ph.D. by presenting their dissertation proposal to an examining committee which also guides and advises the students and monitors research progress throughout their graduate training. The normal time for completion of the Ph.D. is five years.

## DEPARTMENT OF DEVELOPMENTAL AND CELL BIOLOGY

5205 Biological Sciences II; (714) 824-6681

Susan V. Bryant, **Department Chair**

### Faculty

Joseph Arditti: Developmental physiology of orchids

Kavita Arora: *Drosophila* development; TGF- $\beta$  signal transduction; cell signaling

Michael W. Berns: Laser microsurgery of cells, embryos, and tissues

Hans R. Bode: Pattern formation and stem cell differentiation

Marianne 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: Tumor-suppressor genes of *Drosophila* and humans

Susan V. Bryant: Molecular basis of limb development and regeneration

Richard D. Campbell: Morphogenesis; biology of *Hydra*; fractal geometry of biological forms

Ken W.-Y. Cho: Molecular mechanisms of axis specification in *Xenopus*

Donald E. Fosket: Regulation of cytoskeleton formation and function

Patrick L. Healey: Plant cellular differentiation and morphogenesis; ultrastructure and histochemistry of secretory systems; early reproductive development

Franz Hoffmann: Regeneration of cultured plant cells; somatic cell genetics

Daniel J. Knauer: Human antithrombins and related serine protease inhibitors

Stuart M. Krassner: Developmental transitions of hemoflagellates

Arthur D. Lander: Molecular mechanisms of cell and axon guidance; proteoglycans

Howard M. Lenhoff: Biology of *Hydra*; immobilized enzymes; history of experimental biology

J. Lawrence Marsh: Molecular genetics of development in *Drosophila* and humans

Ronald L. Meyer: Development of nerve connections, nerve injury and regeneration

R. Michael Mulligan: RNA editing in plant mitochondria and chloroplasts

Diane K. O'Dowd: Electrical excitability and synaptic connectivity during development

Research programs of the Department of Developmental and Cell Biology focus on molecular aspects of the development of eukaryotic organisms, on the molecular interaction of cells in tissue differentiation, and expression and function of genes related to the biogenesis of organelles and cellular constituents. The main emphasis of research training is in the molecular aspects of cells

and development and the utilization of biotechnology. The Department maintains facilities for research that include genetic, molecular, and biochemical techniques and also has facilities in advanced electron optics, microsurgery, microinjection, and neurophysiology.

The Department offers graduate study in conjunction with the program in Molecular Biology, Genetics, and Biochemistry, which is described in a previous section. Students admitted into the combined program who select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their third year. Students participate in the Developmental or Cell Biology Journal Club and the departmental seminar series which meet weekly during the academic year. In the fall of their third year, students take the advancement-to-candidacy examination by presenting and defending a proposal for specific dissertation research. Students are expected to graduate within five years of residency in the program.

## 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 Advanced Topics in Developmental Biology (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 Advanced Topics in Developmental Neurobiology (2)** F, W, S. Seminar, two hours. Discussion of recent papers in the area of molecular aspects of cellular and developmental neurobiology. Prerequisite: consent of instructor. May be repeated for credit. Satisfactory/Unsatisfactory Only.

**206A-B-C Advanced Topics in Cell Biology (2-2-2)** F, W, S. Seminar, two hours. Advanced study of various topics in cell biology. Prerequisite: consent of instructor. May be repeated for credit. Satisfactory/Unsatisfactory Only.

**209 Molecular Genetics Journal Club (2)** F, W, S. Seminar, one and one-half hours. Advanced topics of current interest in molecular and developmental genetics. May be repeated for credit. Satisfactory/Unsatisfactory Only.

**210 Advanced Development Genetics (2)** W of odd years. Lecture, one and one-half hours. Advanced course on the use of genetic analysis to identify the genes that control cell behavior and development. Formal discussion of genetics and the relationship between genotype and phenotype by instructor followed by student-led discussion based on assigned readings.

**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 Pattern Formation and Embryogenesis (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 Developmental Neurobiology (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.

**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 even 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.

**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

321 Steinhaus Hall; (714) 824-6006

Timothy J. Bradley, *Department Chair*

### Faculty

Francisco J. Ayala: Population and evolutionary genetics  
 Albert F. Bennett: Environmental physiology; physiological ecology  
 Rudy C. Berkelhamer: Director of Instructional Laboratories  
 Peter A. Bowler: Habitat restoration; wetland ecology  
 Timothy J. Bradley: Comparative physiology of ion transport epithelia  
 Nancy Burley: Behavioral ecology, sexual selection, social organization and communication  
 Diane R. Campbell: Plant population biology; pollination ecology  
 F. Lynn Carpenter: Community ecology; behavioral ecology  
 Walter M. Fitch: Molecular and genetic evolution  
 Steven A. Frank: Social behavior and evolutionary genetics  
 Alan G. Gibbs: Comparative physiology and biochemistry; arthropod cuticle lipids and cell membranes  
 Bradford A. Hawkins: Insect population and community ecology  
 James W. Hicks: Comparative physiology of circulation and gas exchange  
 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  
 Laurence D. Mueller: Theoretical and empirical studies of density-dependent natural selection  
 Michael R. Rose: Evolution of life histories and genetic systems  
 Richard Symanski: Conservation biology  
 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 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. A basic course sequence consisting of Ecology and Evolutionary Biology 205, 206, 207, and 208 is recommended for most entering students during their first year. At the end of the first year, students complete an oral examination based upon three of these courses (205, 206, and 208) 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 twice each year. All students are encouraged to submit a research proposal to their advisory committee during their first year of residency. A comprehensive proposal is required

before the end of the second year. The progress of each student is reviewed by the departmental faculty once 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 January 15.

## 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, graduate students, and faculty present current research in ecology and evolutionary biology. Prerequisite: graduate standing. May be repeated for credit. Satisfactory/Unsatisfactory Only.

**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.

**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) S.** Lecture, four hours. Extensive introduction to the primary literature of evolutionary biology. Topics include population genetics, quantitative genetics, neutralism, molecular evolution, evolution of genetic systems, genetic architecture of fitness, speciation, and macroevolution. Restriction: graduate students only.

**207 Quantitative Methods in Ecology and Evolutionary Biology (4) W.** Lecture, four hours. Statistics for ecologists and evolutionary biologists. Emphasis on specific applications and underlying assumptions rather than on methods of calculation. Topics include experimental design, parametric and nonparametric methods, analysis of variance and covariance, and multiple regression. 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.** Seminar, two hours. A summary of information in organismal biology, comparative and ecological physiology, and the biophysical basis of organismal function. Prerequisite: graduate standing or consent of instructor.

**NOTE:** Enrollment in the following courses may be approved for undergraduate students with advanced standing.

**210A-B-C Foundations of Physiology (4-4-4) F, W, S.** Lecture and discussion, four to eight hours. Physical and functional principles common to many living forms. Course forms a basis for subsequent specialization in any of the subdisciplines of physiology. May be repeated for credit. Satisfactory/Unsatisfactory Only.

**218 Advanced Topics in Evolutionary Biology (4) F, S.** Seminar, three hours. Content and instructor will vary from quarter to quarter. Possible topics include quantitative genetics, experimental methods of evolutionary studies, mathematical modeling in evolutionary studies, and the evolution of genetic systems. Prerequisite: consent of instructor.

**219 Advanced Topics in Ecological Genetics (4) W.** Seminar, three hours. Content and instructor will vary from year to year. Possible topics include coevolution, sex-ratio evolution, evolution senescence, plant population biology, and density-dependent selection. Prerequisite: consent of instructor.

**221 Topics in Plant Ecology (2 to 4) F, W, S.** Weekly discussion of current topics in plant population biology and ecology. Satisfactory/Unsatisfactory Only. May be repeated for credit as topics vary.

**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.

**228 Seminar in Conservation Biology (2) F, W.** Devoted to the application of basic ecological principles to the understanding and resolution of environmental problems of both local and global natures. Current problems approached through a combination of readings, group discussions, and visiting speakers. Prerequisite: graduate standing or consent of instructor.

**240 Mathematical Population Biology (2 to 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.

**251 Molecular Evolutionary Methods (4) S of even years.** Emphasizes the understanding of basic algorithms used to analyze nucleotide and amino acid sequences, including methods of alignment, phylogeny reconstruction, and the examination of molecular clocks, codon bias, and compositional equilibrium. Includes simple computer problems. Prerequisite: consent of instructor.

**274 Behavioral Ecology (4) W.** Seminar, three hours. Selected topics in behavioral ecology through discussion of current literature and preparation of papers. Prerequisite: consent of instructor.

**398 Teaching Assistant Seminar (2) W.** Seminar, two hours. Readings, lectures, workshops, and student presentations designed to help develop teaching skills of graduate students teaching university-level biology classes. Topics vary and may include: course organization, presentation styles, exam design, grading, motivating students, and commonly encountered problems. May be repeated for credit as topics vary.

**399 University Teaching (4-4-4) F, W, S.** Limited to Teaching Assistants.

## DEPARTMENT OF MOLECULAR BIOLOGY AND BIOCHEMISTRY

3205 Biological Sciences II; (714) 824-6034

Jerry E. Manning, **Department Chair**

### Faculty

Dana W. Aswad: Regulation of protein function by covalent modification

Barbara K. Burgess: Structure and function of protein-bound [FeS] and [MoFeS] clusters

Michael G. Cumsy: Mitochondrial protein import; regulation of gene expression in yeast

Rowland H. Davis: Regulation of polyamine metabolism in *Neurospora crassa*

Ellie Ehrenfeld: Replication and host interactions of poliovirus and hepatitis A  
Hung Fan: Molecular biology and pathogenesis of mouse and human retroviruses

Charles G. Glabe: Amyloid A $\beta$  peptide in Alzheimer's pathogenesis; gamete recognition

Gale A. Granger: Immunology and pathogenesis: Cell-mediated immunity; tumor immunology; cytokine action

Barbara A. Hamkalo: Molecular basis of differential chromatin condensation

Agnes Henschen-Edman: Protein structure, function, post-translational modification; fibrinogen

Christopher C.W. Hughes: Endothelial cells as initiators and targets of immune responses

Anthony A. James: Malaria parasite development; genetic manipulation of insect vectors

Jerry E. Manning: Major surface proteins and their genes in *Trypanosoma cruzi*

Ricardo Miledi: Neurotransmitter receptors and synaptic functions

Michael B. O'Connor: Control of gene expression and cell-cell communication in development

Timothy F. Osborne: Transcriptional regulation of cholesterol biosynthesis

Thomas L. Poulos: Protein engineering and crystallography

Donald F. Senear: Interactions of proteins and DNA in transcriptional regulation

Andrea J. Tenner: Molecular basis of the enrichment of human leukocyte function

Krishna K. Tewari: Chloroplast DNA: replication and transcription

Sujata Tewari: Neuromolecular mechanisms of alcohol/drug action on the CNS

Luis P. Villarreal: Tissue-specific viral and cellular gene expression; viral vectors

Edward K. Wagner: Herpes simplex virus gene expression during productive and latent infection

Robert C. Warner: Molecular biology of nucleic acids; physical chemistry of macromolecules; mechanisms of genetic recombination

Clifford A. Woolfolk: General microbiology; enzymology

The research interests of faculty in the Department of Molecular Biology and Biochemistry include structure and synthesis of nucleic acids and proteins, regulation, virology, biochemical genetics, gene organization, nucleic acids and proteins, cell and developmental biology, molecular genetics, biomedical genetics, and immunology.

The Department offers graduate study in conjunction with the program in Molecular Biology, Genetics, and Biochemistry, which is described in a previous section. Students admitted into the combined program who select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their third year. Participation in an advanced topics seminar series and completion of at least one course per year for three years are expected of all students.

Several faculty in the Department also are members of the graduate program in Protein Engineering, 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 Seminars in Molecular Biology and Biochemistry (2-2-2) F, W, S.** Seminar, two hours. Presentation of research from department laboratories or, when pertinent, of other recent developments. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only. May be repeated for credit as topics vary.

**202A-B-C Tutorial in Molecular Biology and Biochemistry (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. (Coordinators, B. Hamkalo and D. Senear)

**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 98 and 99 or the equivalent and Chemistry 51A-B-C or the equivalent. (Coordinator, R. Bradshaw and L. Vickery)

**205 Topics in Viral Gene Expression (4) W.** Lecture, three hours. Primary research data on the major DNA and RNA viruses emphasizing strategies of regulation of gene expression. Utilization of viruses as molecular biological tools. Graduate-level knowledge of the biochemistry and molecular biology of macromolecules is required. Prerequisites: Molecular Biology 203 and 204 or the equivalent. (Coordinators, E. Wagner and B. Semler)

**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. (Coordinators, R. Sandri-Goldin and C. Greer)

**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) F.** 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 Literature in Protein Engineering (1) F, W, S.** Seminar, one hour, discussion, half-hour. Students review current papers in the field of protein engineering and present the ideas contained therein to other students and faculty. May be repeated for credit. Same as Physiology 209 and Engineering BE209.

**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, B. Hamkalo and J. Manning)

**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, S. Tewari)

**218 Clinical Cancer (3) F of even years.** Lecture, two hours. Designed to acquaint students in basic life science with clinical cancer. Restricted to graduate and postdoctoral students. May be repeated for credit. (Coordinator, H. Fan)

**221 Advanced 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, G. Granger)

**223 Computational Molecular Biology (4) W.** Lecture, one hour; laboratory, two hours. The use of computer networks, data bases, and programs in molecular biology. Students choose a protein sequence from DNA sequence data. This sequence is entered, edited, and analyzed following simulated genetic engineering. Prerequisite: consent of instructor. (Coordinator, L. Villarreal)

**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, E. Wagner)

**231 Molecular Biology of Fungi (4) S of every third year beginning 1993.** Lecture, three hours. Current topics in the molecular biology of filamentous fungi and allied organisms, such as mechanisms of recombination, DNA-mediated transformation, genome organization, metabolic regulatory systems, and mating systems. (Coordinator, R. Davis)

**240 Macromolecular Structure, Function, and Interaction (4) F.** Lecture, three hours; discussion, one hour. Chemistry of macromolecules; emphasis on proteins. Physical and chemical properties of proteins, forces that maintain protein structure, relationship between structure and function, interactions of proteins with ligands and other macromolecules, and experimental methods to study structure, function, and interactions. Corequisite: Chemistry 130A, 131A, or equivalent. Prerequisites: Molecular Biology 203 and 204. Concurrent with Biological Sciences 140. (Coordinators: D. Senear and T. Poulos)

**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

2205 Biological Sciences II; (714) 824-6025

Herbert Killackey, **Department Chair**

### Faculty

Dana Aswad: Neurochemistry and molecular neurobiology  
 Carl Cotman: Neurochemistry  
 Ron D. Frostig: Systems neurobiology  
 Christine M. Gall: Central nervous system morphological plasticity  
 Robert K. Josephson: Invertebrate neurophysiology  
 Herbert P. Killackey: Developmental neuroanatomy  
 Frank LaFerla: Transgenic technology and neurodegenerative disorders  
 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  
 Raju Metherate: Synaptic physiology and plasticity in sensory neuroprocesses  
 Ricardo Miledi: Synaptic physiology and molecular neurobiology  
 Ian Parker: Synaptic physiology  
 Arnold Starr: Cognitive and sensory neuroprocesses  
 Georg Striedter: Neural control of behavior; brain evolution  
 Katumi Sumikawa: Molecular neurobiology  
 Norman M. Weinberger: Neural bases of attention and learning  
 John H. Weiss: Excitatory amino acids in neural signaling and neurodegeneration  
 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 year, and maintain an overall GPA of 3.3 or better. They also must take a minimum of four advanced courses before graduation and must participate in directed research and teaching each year. During their second year, students prepare a Master's thesis, which must be defended by the end of that year. All students meeting minimal requirements will receive an M.S. degree, but only those students judged well qualified will be recommended for continuation in the Ph.D. program. To advance to candidacy for the Ph.D., students must further prepare a research proposal and must pass an oral examination 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. Although students are examined for an M.S. degree as an intercalated part of the Ph.D. program, the Department accepts only those students seeking a doctorate. 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 January 7.

## 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.

**201A-B-C Research in Psychobiology (2 to 12 per quarter) F, W, S.** For first-year graduate students, 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 to 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 to 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 Neuroendocrinology (1 to 4).** Lecture, three hours. The effects of hormones on the brain and behavior, developmentally and in adulthood. Neural control of hormone secretion, including the effects of experience. Prerequisite: Psychobiology graduate student or consent of instructor.

**206 Developmental Psychobiology (1 to 4).** Lecture, three hours. Survey of issues involved in the formation of neurons and neural connections in the brain and their role in the differentiation of behavior. Prerequisite: Psychobiology graduate student or consent of instructor. May be repeated for credit as topics vary.

**207 Methods in Psychobiology (1 to 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. Satisfactory/Unsatisfactory Only. May be taken for credit for a total of eight units.

**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. Satisfactory/Unsatisfactory Only.

**209 Current Topics in Psychobiology (1 to 4).** Lecture, four and one-half hours. Various aspects of psychological research are discussed. Prerequisite: Psychobiology graduate student or consent of instructor. May be repeated for credit as topics varies.

**210 Learning and Memory (1 to 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.

**221A-B Systems Neurobiology (6-2) F, W.** Study of the mammalian nervous system at the systems level. Anatomy and physiology of sensory, motor, and integrative functions. Prerequisite: Psychobiology or Anatomy and Neurobi-

ology graduate student or consent of instructor. May be taken for credit twice for a total of 16 units. Same as Anatomy and Neurobiology 221A-B.

**222 Neurophysiology (4) F.** Lecture, three hours. Biophysical mechanisms of membrane potentials, voltage- and ligand-gated ion channels, action potential propagation, synaptic transmission, and intracellular second messenger systems. Prerequisite: Psychobiology or Anatomy and Neurobiology graduate student or consent of instructor. May be taken for credit twice. Same as Anatomy and Neurobiology 222.

**222L Neurophysiology Laboratory (2) W.** Use of contemporary techniques for studying membrane channels and receptors. Methods include extracellular and intracellular recording, patch clamp, quantal analysis of synaptic transmission, heterologous expression of genes encoding channels and receptors, and fluorescence calcium monitoring. Satisfactory/Unsatisfactory only. Prerequisite: Psychobiology or Anatomy and Neurobiology graduate student or consent of instructor. May be taken for credit twice. Same as Anatomy and Neurobiology 222L.

**223 Synaptic, Cellular, and Molecular Neurobiology (4) W.** Lecture, three hours. Chemical basis of molecular and cellular events in neurobiology, including neurotransmitter biosynthesis and release, structure and function of ion channels, second messenger pathways, gene regulation, and synaptic plasticity. Prerequisite: Psychobiology or Anatomy and Neurobiology graduate student or consent of instructor. May be taken for credit twice. Same as Anatomy and Neurobiology 223.

**224 Developmental Neurobiology (4) S.** Lecture, three hours. Developmental mechanisms involved in formation of the nervous system in both invertebrates and vertebrates. Analysis of cellular mechanisms involved in differentiation, morphogenesis, synaptic connectivity, and electrical activity. Sexual differentiation. Prerequisite: Psychobiology or Anatomy and Neurobiology graduate student or consent of instructor. May be taken for credit twice. Same as Anatomy and Neurobiology 224.

**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 molecular 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.

**245 Advanced Topics in the Neurobiology of Aging (4) S.** Covers the major topics and rapidly advancing areas in the molecular and cellular events leading to brain aging and dementia. Lectures are presented by investigators active in the fields of aging and neurodegeneration.

**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 Basal Ganglia and Movement Disorders (4).** Principles underlying the organization and functions of the basal ganglia and amygdala are considered. The circuitry, neurotransmitters, and influences on cortex and brainstem motor regions are discussed. Clinical disorders of the basal ganglia, including parkinsonism and ballism, are included.

**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.

**257 Advanced Topics in Dementia (4) S.** Seminar, three hours. Understanding of dementia becomes increasingly important as individuals live longer and the elderly account for a larger percentage of the population. Topics focus on Alzheimer's disease and related disorders to examine pathology, diagnosis, treatment, and basic research. Lectures are presented by investigators active in dementia. May be taken for credit two times as topics vary.

**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 260-276. 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 Systems Dynamics (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 Neural Injury (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.

**274 Seminar in Central Trophic Factors and Plasticity (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.

**277 Seminar in Neurobiology (1.3) F, W, S.** Open only to Psychobiology graduate students.

**280 History of Neuroscience (4).** An overview of the conceptual and technical foundations of contemporary neuroscience from ancient times to the present. The subjects include synapses, neurons, brain organization, sensory, motor and regulatory systems, learning and memory, human brain function and dysfunction.

**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) 824-6050

Richard T. Robertson, **Department Chair**

### Faculty

Tallie Baram: Developmental neurobiology of seizures; CNS mechanisms of stress response

Robert H. Blanks: Vestibular physiology and anatomy

Anne Calof: Developmental neurobiology; molecular mechanisms of neurogenesis and programmed cell death

James H. Fallon: Neuronal growth factors and neurotransmitter interactions  
Christine M. Gall, *Department Vice Chair*: Regulation of neuronal gene expression; neurotrophic factors

Roland A. Giolli: Experimental neuroanatomy; visual system

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 system physiology and development

W. Ian Lipkin: Molecular biology of neurotropic viruses; Borna disease virus

Sandra E. Loughlin: Developmental neurobiology of neurotransmitter systems; Parkinson's disease

Diane K. O'Dowd: Regulation of neuronal excitability; development of functional synaptic connections

Charles E. Ribak: Neurocytology; neurotransmitters; neuronal circuitry

Richard T. Robertson: Developmental neurobiology; forebrain development

Martin A. Smith: Cellular and molecular mechanisms of synapse formation

Ivan Soltesz: Molecular and cellular neurobiology

John E. Swett: Peripheral nervous system, spinal cord, pain mechanisms

John H. Weiss: Mechanisms of neural degeneration

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 molecular neurobiology, mechanisms of neural development, ion channel physiology, experimental neuroanatomy, cellular neurobiology, and structure and function of sensory and motor systems. The Department maintains research facilities to provide the student with experience in a variety of techniques including: electron microscopy; immunocytochemistry; molecular neurobiology; neuroanatomical tracing; single-unit neurophysiology; tissue culture methodology; laser confocal microscopy; and computer analysis of 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 and fundamentally important research. The second goal is to gain the knowledge and ability to teach graduate, undergraduate, and professional courses in the neurosciences. These two goals are achieved through a basic and extended academic program that is tailored to the individual needs of the student.

The new combined neurosciences graduate core curriculum is designed to provide all students with a fundamental knowledge of modern neurobiology, with an emphasis on molecular, morphological, and physiological approaches. In the first year, students are required to take selected courses in neuroanatomy, neurophysiology, cell and molecular neurobiology, and developmental neurobiology. In the second year, students select from a variety of courses including neural systems, neurochemistry, and pharmacology. Over the usual four-year training period the student is required to complete a practical course in statistics, selected seminar courses, at least two laboratory rotations, and a total of 50 credit hours of research. 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 a teaching 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 year. By the end of the first year the student and the Graduate Committee select a faculty sponsor who will supervise the dissertation research. A two-part Qualifying Examination is given to the student by a Candidacy Committee no later than the end of the fall quarter of the third year. 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 and a dissertation proposal.

The dissertation research topic 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 to five years to complete.

## Courses in Anatomy and Neurobiology

**200 Research in Anatomy (2 to 12) F, W, S, Summer.** Individual research supervised by a particular faculty member. Prerequisite: consent of instructor. May be repeated for credit.

**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.

**202A Cellular and Molecular Neuroscience (3) W.** Lecture, three hours; discussion, one hour. Function of the nervous system at molecular and cellular levels including the anatomy and physiology of neurons, muscles, and receptors. Corequisite: Anatomy 203A. Prerequisite: consent of Department. Same as Physiology 202A.

**202B Human Neuroscience (4) S.** Lecture, three hours; discussion, one hour; laboratory, one hour. Study of the human nervous system at the systems level including the physiology and anatomy of sensory, motor, and integrative functions. Prerequisite: Anatomy 202A and consent of Department.

**203A-B Human Microscopic Anatomy (3-3) 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.

**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 monoamine 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.

**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.

**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 neuro-anatomical 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.

**209E Seminar in Cellular and Molecular Neurobiology (4) S.** Readings and critical discussion of recent issues in cellular and molecular neurobiology. Open to graduate students and advanced undergraduates only.

**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.

**221A-B Systems Neurobiology (6-2) F, W.** Study of the mammalian nervous system at the systems level. Anatomy and physiology of sensory, motor, and integrative functions. Prerequisite: Anatomy and Neurobiology or Psychobiology graduate student or consent of instructor. May be taken for credit twice for a total of 16 units. Same as Psychobiology 221A-B.

**222 Neurophysiology (4) F.** Lecture, three hours. Biophysical mechanisms of membrane potentials, voltage- and ligand-gated ion channels, action potential propagation, synaptic transmission, and intracellular second messenger systems. Prerequisite: Anatomy and Neurobiology or Psychobiology graduate student or consent of instructor. May be taken for credit twice. Same as Psychobiology 222.

**222L Neurophysiology Laboratory (2) W.** Use of contemporary techniques for studying membrane channels and receptors. Methods include extracellular and intracellular recording, patch clamp, quantal analysis of synaptic transmission, heterologous expression of genes encoding channels and receptors, and fluorescence calcium monitoring. Satisfactory/Unsatisfactory only. Prerequisite: Anatomy and Neurobiology or Psychobiology graduate student or consent of instructor. May be taken for credit twice. Same as Psychobiology 222L.

**223 Synaptic, Cellular, and Molecular Neurobiology (4) W.** Lecture, three hours. Chemical basis of molecular and cellular events in neurobiology, including neurotransmitter biosynthesis and release, structure and function of ion channels, second messenger pathways, gene regulation, and synaptic plasticity. Prerequisite: Anatomy and Neurobiology or Psychobiology graduate student or consent of instructor. May be taken for credit twice. Same as Psychobiology 223.

**224 Developmental Neurobiology (4) S.** Lecture, three hours. Developmental mechanisms involved in formation of the nervous system in both invertebrates and vertebrates. Analysis of cellular mechanisms involved in differentiation, morphogenesis, synaptic connectivity, and electrical activity. Sexual differentiation. Prerequisite: Anatomy and Neurobiology or Psychobiology graduate student or consent of instructor. May be taken for credit twice. Same as Psychobiology 224.

## DEPARTMENT OF BIOLOGICAL CHEMISTRY

Building D, Room 240, Medical Sciences I; (714) 824-6051  
Stuart M. Arfin, **Department Chair (Acting)**

### Faculty

Stuart M. Arfin: Protein processing and turnover; functions of ubiquitin  
Ralph A. Bradshaw: Growth factor action; signal transduction; protein processing

Chris L. Greer: RNA processing and nuclear export; tRNA gene expression  
Haoping Liu: MAP kinase signal transduction; dimorphic regulation in yeast  
Calvin S. McLaughlin: Macromolecule biosynthesis; control of cell division  
Masayasu Nomura: RNA polymerase I; nuclear transport and function  
Robert E. Steele: Molecular biology of *Hydra* development

Faculty research interests in the Department of Biological Chemistry focus on the regulation of gene expression, (RNA splicing, mammalian chromosomal organization, and nucleic acid-protein interactions), the regulation of cellular processes (membrane-hormone interactions, regulation of protein synthesis, molecular genetics of metabolic processes, and intracellular protein localization), and the molecular basis of development. Students are exposed to technical expertise in all facets of current research in molecular biochemistry from protein chemistry to genetic engineering.

The Department offers graduate study under the auspices of the School of Biological Sciences and in conjunction with the program in Molecular Biology, Genetics, and Biochemistry, which is described in a previous section. Students admitted into the combined program who select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their third year. Students are required to attend and participate in the departmental Journal Club and are required to attend departmental seminars. In addition, students are required to complete two advanced-level graduate courses subsequent to entering the Department's Ph.D. concentration. In the third year, students take the advancement-to-candidacy examination for the Ph.D. degree by presenting and defending a proposal for specific dissertation research. Completion of the Ph.D. normally requires five years of graduate study.

Several faculty in the Department also are members of the graduate program in Protein Engineering, which is described in a previous section.

### 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.

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. 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) 824-5261  
Dennis D. Cunningham, **Department Chair**

### Faculty

Dennis D. Cunningham: Proteases and protease nexins: regulation of neural cells  
Alan L. Goldin: Molecular analysis of ion channel function  
Sidney H. Golub: Cellular immunity and tumor biology  
George A. Gutman: Potassium channel and immunoglobulin super-family genes  
G. Wesley Hatfield: Effects of DNA topology on transcription  
Suzanne B. Sandmeyer: Molecular genetics of a position-specific yeast retrovirus-like element  
Rozanne M. Sandri-Goldin: Regulatory functions of a post-transcriptionally acting herpes virus protein  
Michael E. Selsted: Host defense systems in phagocytic leukocytes and mucosal epithelium  
Bert L. Semler: Replication of picornavirus RNAs; RNA-protein and protein-protein interactions  
Eric J. Stanbridge: Tumor suppressor genes and oncogenes in human cancer  
Donald F. Summers: Molecular biology of hepatitis A virus replication  
Marian L. Waterman: Regulation of transcription in human T lymphocytes

The Department of Microbiology and Molecular Genetics provides advanced training to individuals interested in the regulation of gene expression and the structural and functional properties of proteins encoded by these genes. The research interests of the Department focus on the molecular biology and genetics of viruses, bacteria, and yeast; the fundamentals of the immune response; the molecular biology of cultured animal cells; the genetic basis of cancer; and the genetics and physiology of infectious agents.

The Department offers graduate study under the auspices of the School of Biological Sciences and in conjunction with the program in Molecular Biology, Genetics, and Biochemistry, which is described in a previous section. Students admitted into the combined program who select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their third year.

Participation in the Department's seminar series and completion of at least one advanced topics course per year for three years are expected of all students. In their third year, students take the advancement-to-candidacy examination for the Ph.D. degree by presenting and defending a proposal for specific dissertation research. Completion of the Ph.D. normally requires five years of graduate study.

### 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) W, S.** Lecture, five hours; laboratory, three hours. Advanced course for medical students in the College of Medi-

cine. 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.

**213 Advanced Prokaryotic Molecular Genetics (4) W.** Lecture. Molecular models for biological systems draw heavily on prokaryotic organisms and their viruses. Topics: bacterial and phage genetics, regulation of transcription and translation in prokaryotes. Applies knowledge of these processes to understanding of metabolism and development at the organismic level.

**215 Molecular Immunology (4) S.** Lecture/seminar, three hours. Discussion and student presentation with the aim of achieving a basic understanding of the hematopoietic system, and the cellular and molecular basis of adaptive immunity. 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.

**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 different groups of viruses, viral transformation, and mechanisms of viral gene expression. Prerequisite: consent of instructor.

**221 Immunopathogenic Mechanisms of Disease (3) S.** The immune system plays a prominent role in disease. Course utilizes lectures and student presentations to teach concepts of autoimmunity and immune system interactions with bacteria, parasites, and in cancer. Prerequisite: Microbiology and Molecular Genetics 215.

**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.

**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) 824-5863  
Janos K. Lanyi, **Department Chair**

### Faculty

Nancy L. Allbritton: Signal transduction by second messengers and protein kinases  
Kenneth M. Baldwin: Activity and hormonal factors regulating striated muscle plasticity  
Michael D. Cahalan: Ion channels in the nervous and immune systems  
K. George Chandy: Molecular biology and structure of ion channels; novel therapeutic agents  
J. Jay Gargus: Molecular analysis of membrane signaling proteins  
Alan L. Goldin: Molecular analysis of ion channel function  
George A. Gutman: Potassium channel and immunoglobulin super-family genes  
Harry T. Haigler: Growth factor signal transduction; annexin calcium-binding proteins  
James E. Hall: Biophysics of membrane channels  
Janos K. Lanyi: Structure and function in bacterial rhodopsins  
Kenneth J. Longmuir: Lipid metabolism; liposomes; membrane fusion  
Thomas L. Poulos: Protein engineering and crystallography  
Hamid M. Said: Cellular and molecular aspects of intestinal transport of vitamins  
Ivan Soltesz: Function and modulation of synaptic GABA<sub>A</sub> receptors  
Bruce J. Tromberg: Optical spectroscopy in cells and tissues  
Larry E. Vickery: Metalloproteins; steroid hormone biosynthesis and receptors; molecular chaperones  
Stephen H. White: Protein folding in membranes



The Department of Physiology and Biophysics offers research opportunities in the molecular biophysics of membranes and proteins, ion channels and signal transduction, endocrinology, molecular and cell biology, developmental neurobiology, and exercise physiology.

The Department offers graduate study under the auspices of the School of Biological Sciences and in conjunction with the program in Molecular Biology, Genetics, and Biochemistry, which is described in a previous section. Students admitted into the combined program who select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their third year.

The faculty conducts quarterly reviews of all continuing students to ensure that they are maintaining satisfactory progress within their particular academic program. Students participate in a literature review course designed to strengthen research techniques and presentation skills and attend the weekly Department colloquium. During the third year, each student presents a seminar on a topic assigned by the formal candidacy committee. Following the seminar, the committee examines the student's qualifications for the successful conduct of doctoral dissertation research. Each student must submit a written dissertation on an original research project and successfully defend this dissertation in an oral examination. Interdisciplinary dissertation research involving more than one faculty member is encouraged. Students who have met all necessary prerequisites should be able to complete the Ph.D. in five years.

Several faculty in the Department are also members of the graduate program in Protein Engineering, which is described in a previous section.

## Courses in Physiology and Biophysics

**200 Research in Physiology and Biophysics (2 to 12 per quarter)** F, W, S. Individual research directed toward doctoral dissertation and supervised by a particular professor. Prerequisite: consent of instructor. May be repeated for credit.

**201 Introduction to Physiology Research (1 to 4 per quarter)** F, W, S. Introduction to research in physiology and related sciences. Students concentrate on techniques emphasized in the various laboratories of the Department. Prerequisite: consent of instructor. May be repeated for credit.

**202 Cellular and Molecular Neuroscience (3).** Function of the nervous system at molecular and cellular levels including the anatomy and physiology of neurons, muscles, and receptors. Prerequisite: consent of department. Same as Anatomy 202A.

**203 Review of the Literature of Physiology and Biophysics (2).** Students review papers in the current literature and present ideas contained therein to other students and faculty. Prerequisite: consent of instructor. May be repeated for credit.

**204 Concepts of Biophysics (3)** S. Lecture, two hours; laboratory, one hour. Principles of crystallography; introduction to time-resolved absorption and fluorescence spectroscopy; the concepts of kinetic order and kinetic rate theory. Prerequisites: graduate standing in Biological Sciences and consent of instructor. Formerly Physiology 204B. *Course offered only if sufficient demand exists.*

**205 Electronics for Biologists (4)** W. Lecture, three hours; laboratory four hours. Basic principles of electricity; properties and use of discrete components and integrated circuits; circuit analysis and design. Intended for advanced students in the life sciences. Same as Psychobiology 249.

**206A-B Introduction to Medical Physiology (5-6)** W, S. Lecture, six hours; discussion, two hours; other, two hours. Vertebrate physiology with emphasis on humans and on the relationship between the function of normal tissues and the processes of disease. Fundamental principles of physiology and the interrelationships which control organ function. Prerequisite: Physiology 202 and consent of Department.

**209 Literature in Protein Engineering (1)** F, W, S. Seminar, one hour, discussion, half-hour. Students review current papers in the field of protein engineering and present the ideas contained therein to other students and faculty. May be repeated for credit. Same as Molecular Biology 209 and Engineering BE209.

**210 Molecular Physiology (3)** S. Guided seminar format. Topics selected illustrate investigations into range of disease phenotypes from the organ, cell, and molecular level. Students present and guide discussion based upon assigned papers, additional research, and faculty discussions. Goal is to formulate plan of investigation. Prerequisite: consent of instructor.

**220 Physiology of Muscular Activity (3)** W. 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. 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.

**242 Protein Engineering (3).** The design of novel proteins and their production by genetic manipulation. Principles of protein structure and function and techniques of molecular biology relevant to protein engineering. Applications of protein technology. Prerequisites: Molecular Biology and Biochemistry 203 and 204. Same as Biochemical Engineering BE242.

**261 Protein Stability and Structure (3)** F. Lecture, discussions, demonstrations; three hours. Fundamental biophysical principles of the folding and structure of proteins in aqueous and membrane environments. Analysis of key papers concerned with general structural features of proteins, protein folding, and protein structure prediction. Prerequisites: physical chemistry, graduate course in biochemistry; 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. Lecture, one hour; discussion, three hours. Students read and discuss 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 to 12 per quarter)** F, W, S, Summer. Preparation and completion of the dissertation required for the Ph.D. or Master of Science degree. Prerequisite: consent of instructor. May be repeated for credit.

# DEPARTMENT OF EDUCATION

Michael E. Martinez, **Chair (Acting)**

245 Berkeley Place  
General Information: (714) 824-5117  
Fax: (714) 824-2965  
E-mail: educate@uci.edu  
World Wide Web: <http://www.gse.uci.edu/>

## Faculty

Kenneth Bailey, Ph.D. University of California, Los Angeles, *Senior Lecturer Emeritus*  
Henry J. Becker, Ph.D. The Johns Hopkins University, *Professor of Education* (instructional use of computers, survey and evaluation research)  
Joan S. Bissell, Ed.D. Harvard University, *Senior Lecturer* (learning theory, research and evaluation, educational policy)  
Kimberly Burge, M.A. University of California, Los Angeles, *Lecturer* (applied technology, art education)  
Suzanne Charlton, Ph.D. Claremont Graduate School, *Lecturer* (multicultural education, CLAD/BCLAD)  
Linda Clinard, Ph.D. University of Michigan, *Lecturer* (reading education)  
Dennis Evans, Ed.D. University of Southern California, *Director of the Credential Programs of the Department of Education and Lecturer* (educational administration, secondary education)  
Alan R. Hoffer, Ph.D. University of Michigan, *Professor of Education* (mathematics and computer education)  
Anne Lewis, Ph.D. University of California, Santa Barbara, *Assistant Professor of Education* (mathematics education, cognitive psychology)  
Michael E. Martinez, Ph.D. Stanford University, *Chair (Acting) of the Department of Education and Associate Professor of Education* (science education, assessment, psychology of learning)  
Jack McCullough, Ph.D. United States International University, *Lecturer Emeritus*  
Susan M. Meyers, M.S. University of Wisconsin, *Supervisor of Teacher Education* (intern program, reading and secondary education)  
Louis F. Mirón, Ph.D. Tulane University, *Associate Professor of Education and Social Sciences, Director of the Ed.D. Program, and Director of Chicano/Latino Studies* (social theory, policy studies, urban education)  
Kathryn Nakagawa, Ph.D. Northwestern University, *Assistant Professor of Education* (social and cultural context of education, educational policy)  
Carol Booth Olson, Ph.D. University of California, Los Angeles, *Academic Coordinator* (UCI Writing Project, language arts education)  
Rita W. Peterson, Ph.D. University of California, Berkeley, *Senior Lecturer* (science education, special-needs education)  
Mary W. Roosevelt, National Froebel Foundation Teaching Degree, University of London, *Supervisor of Teacher Education* (elementary education)  
Myron Simon, Ed.D. University of Michigan, *Professor Emeritus of English and Education* (secondary English and philosophy of education)  
Timothy M. Tift, M.A. Pepperdine University, *Lecturer* (health, physical education)

## Lecturers

Mary Elizabeth Andrini, M.A. Pepperdine University, *Lecturer* (mathematics education)  
Bruce Baron, M.S. Pepperdine University, *Lecturer* (social science education)  
Peter A. Hartman, Ph.D. Stanford University, *Lecturer* (educational administration, school finance)  
Jon Johnson, M.S. University of California, Irvine, *Lecturer* (science education)  
Karen Nakai, Ed.D. Pepperdine University, *Lecturer* (social science education)  
Edward Rodevich, M.A. California State University, Long Beach, *Lecturer* (mathematics education)  
Janice Shultz, M.A. California State University, Fullerton, *Lecturer* (mathematics education)  
Jean Stone, M.A. California State University, Long Beach, *Lecturer* (language arts)  
Ronald Wenkart, J.D. University of La Verne, *Lecturer* (school law, labor relations)

The Department of Education is dedicated to academic scholarship and the application of research to educational practice. The Department offers programs leading to credentials required for teaching or administration in the public schools of California, and to the Ed.D. degree in Educational Administration.

Faculty associated with the Department of Education include researchers and scholars of national and international reputation. Many faculty have taught or served as administrators in public schools, and all are committed to the continued improvement of education through conducting research and the development of more effective approaches to teaching.

## Teaching and Service Credential Programs

The Department of Education offers professional education programs which lead to California teaching and service credentials as established by the Teacher Preparation and Licensing Law of 1970, known generally as the Ryan Act.

The Department of Education offers full-time programs leading to California's two basic teaching credentials—the Single Subject Credential and the Multiple Subject Credential. There are two paths available to obtain the teaching credential: the Intern Teaching Credential Program and the Student Teaching Credential Program.

## Preliminary and Professional Clear Teaching Credentials

**The Preliminary Credential** is awarded by the State upon completion of a baccalaureate degree, the professional education course sequence, a course in the teaching of reading, student teaching, a college-level course or examination covering the U.S. Constitution, the passage of the California Basic Education Skills Test, (CBEST), and verification of subject matter competence, e.g., Praxis II, Single Subject Assessment for Teaching (SSAT), or an approved subject-matter program. (See Verification of Subject Matter Competence).

**The Professional Clear Credential** is awarded by the State upon completion of a baccalaureate degree and all fifth-year requirements. The fifth year is defined as 45 quarter units of upper-division or graduate-level post-baccalaureate courses including computer education, special education, mainstreaming, and health education which requires Cardio-Pulmonary Resuscitation training. The fifth year may also include the professional education 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 requirements. The stipend is paid by the school district. To serve as an intern in a school district, the student must be enrolled as a graduate student in the Department of Education. Intern teachers are selected by participating school districts and UCI based on the background and experience of the candidate, the needs of the particular school district, and the candidate's eligibility for UCI's Education program. The number of internships varies from year to year. For further information see the intern program coordinator in the Department of Education.

## Student Teaching Credential Program

The Student Teaching Credential Program is characterized by a full year of involvement in the public schools beginning with school observations in the fall quarter and culminating in student teaching during the winter and spring quarters. (Students are required to begin the school observations when the public schools open in September. Student teaching concludes as the public schools complete the school year in June.)

Intensive course work in the fall quarter prepares students for full-time student teaching experiences which begin in the winter and continue through the spring quarter. Course work related to student teaching continues at a reduced level during the winter and spring quarters. The student teaching experiences are supervised by school-site teachers trained as University Associates.

### SINGLE SUBJECT INSTRUCTION

“Single subject instruction” means the practice of teaching in a specific subject area, as is commonly practiced in California high schools and junior high schools. UCI offers Single Subject Teaching Credentials in art, English, languages other than English, mathematics, music, sciences, and social science.

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 proposed credential authorization), 102H, 105B, 162†, 173\*, 174, 302A, 302LA, 302B†, 302LB†, 320A-B-C-D-E, and 380†.

\* Ed. 173 is a prerequisite and must be successfully completed prior to beginning the credential program. Ed. 176 may substitute for Ed. 173. NOTE: In addition to Ed. 173, Ed. 124 is a prerequisite for students pursuing the CLAD/BCLAD emphasis.

† Ed. 162, 302B, 302LB, and 380 are required for the Professional Clear Credential and must be taken within five years of issuance of the Preliminary Credential. With approval, students may enroll in these courses during the preliminary program.

#### Sample Fifth-Year Program — Single Subject Credential

FALL	WINTER	SPRING
Ed 101	Ed 102H	Ed 102H
Ed 102‡	Ed 302A, LA	Ed 320C, D, E
Ed 105B	Ed 320A, B	
Ed 174		

‡ Section is dependent upon content area.

### MULTIPLE SUBJECT INSTRUCTION

“Multiple subject instruction” means the practice of teaching multiple subjects as commonly practiced in California elementary schools.

Candidates who enroll in the Multiple Subject Credential program at UCI generally are required to take the following courses: Education 104A, 105A, 110A, 110B, 110C, 110D, 162†, 173\*, 174, 300A-B-C-D-E, 301A, 301LA, 301B†, 301LB†, and 380†.

\* Ed. 173 is a prerequisite and must be successfully completed prior to beginning the program. Ed. 176 may substitute for Ed. 173. NOTE: In addition to Ed. 173, Ed. 124 is a prerequisite for students pursuing the CLAD/BCLAD emphasis.

† Ed. 162, 301B, 301LB, and 380 are required for the Professional Clear Credential and must be taken within five years of issuance of the Preliminary Credential. With approval, students may enroll in these courses during the program.

#### Sample Fifth-Year Program — Multiple Subject Credential

FALL	WINTER	SPRING
Ed 105A	Ed 104A	Ed 105A
Ed 110A, B, C, D	Ed 105A	Ed 110A, B, C, D
Ed 174	Ed 110A, B, C, D	Ed. 300C, D, E
Ed 301A, LA	Ed 300A, B	

## The Student Teaching Experience

Student teaching for Single Subject candidates (grades 7–12) is defined as a full-day, five-day-per-week assignment, for 18 weeks (or its equivalent) in the appropriate classroom setting.

Multiple Subject candidates are assigned to teach in grades K–6. Student teaching for Multiple Subject candidates is defined as a full-day, four-day per week assignment during the first quarter of student teaching and a full-day, five-day per week assignment during the second quarter. The assignment is split to include two levels within the K–6 range.

Each student will have student teaching and/or field experience in a multi- or cross-cultural situation.

Clearances for student teaching are processed by the Department of Education and are contingent upon the Certificate of Clearance, a current tuberculin test clearance, academic preparation clearances including CBEST, and verification of subject matter competence.

A grade of B or better is required in all courses and student teaching for successful completion of the program. If competence has been demonstrated by the conclusion of the student teaching program and all other requirements are met, the student is eligible for a credential recommendation by UCI.

## Administrative Services Credential

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 leading to the Professional Administrative Services Credential generally required for school administrators.

The Administrative Services Credential is a two-stage credential. In the first stage, a candidate obtains the Preliminary Administrative Services Credential by completing an approved program and by securing an administrative position in public education. It is at this point that the candidate begins pursuing the Professional Administrative Services Credential (stage two).

The Professional Administrative Services Credential requires the completion of 36 quarter units and two years of acceptable full-time administrative experience. These requirements must be completed prior to the expiration date of the Preliminary Administrative Services Credential.

Students interested in this credential should make an appointment with a counselor in the Department of Education.

## Preparation for Applying to the Credential Programs

A student's eligibility for admission is supported by passing the CBEST and successfully completing the appropriate subject area examinations or an approved subject matter program prior to applying for admission to the Department of Education.

Reservations to take examinations must be made well in advance of the test date. Students are urged to contact the Department of Education for information about the tests and test dates at least one year before application deadline.

The Department of Education recommends appropriate field experiences prior to entering the program. Course credit for field experience is available through Education 100, as well as through other University programs. Field experience can also be earned by other appropriate activities, e.g., tutoring, assisting in public school classrooms, and participating in the Teachers of Tomorrow Club.

An application is enhanced if prerequisite courses (Education 173 for all teaching credential programs and Education 124 for the CLAD/BCLAD emphasis) are completed prior to application. Education 176 may be substituted for Education 173.

## ADMISSION TO THE CREDENTIAL PROGRAMS

Information and applications are available from the Department of Education, 245 Berkeley Place. Admission is based on a broad index, including, but not limited to, the following:

**Academic Achievement.** Completion of a baccalaureate degree from an accredited institution and a minimum grade point average of 3.0 will support consideration of admission to the Department of Education. Undergraduates who enroll in courses leading to a credential are not guaranteed admission to the program; admission through the regular graduate admissions process is required.

**Written Recommendations.** Three letters of recommendation are required for admission. These letters should relate to the student's potential for success in teaching or administration and should indicate the student's ability to perform graduate-level work. For applicants to the teaching credential programs, at least one letter should be from an instructor in the student's undergraduate major.

**CBEST.** Evidence of having passed the California Basic Educational Skills Test should accompany the application for admission.

**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 upon admission to the Department of Education for advice on how to handle this process.

## Verification of Subject Matter Competence

**Single Subject Credential.** California requires all credential candidates to demonstrate subject matter competence prior to student teaching. This can be achieved by passing the appropriate Praxis II subject assessments and the SSAT specialty area tests or by completing a subject matter program in the teaching area. (Students pursuing a subject matter program may student teach with a minimum of four-fifths of the subject matter program completed. However, the entire subject matter program must be completed for the credential.) Many academic majors at UCI, which correspond to disciplines commonly taught in public schools, are approved as subject matter programs if additional specific requirements are met. Students should consult a counselor in the Department of Education for detailed information.

**Multiple Subject Credential.** The Praxis II Multiple Subject Assessment for Teachers (MSAT) or an approved subject matter program is a requirement for the Multiple Subject Credential. The MSAT consists of three sections: Content Knowledge, Content Area Exercises 1, and Content Area Exercises 2. It includes the following areas: English, mathematics, science, social science, physical education, human development, and visual and performing arts. All students must pass the MSAT prior to beginning student teaching or must complete at least four-fifths of an approved subject matter program. Completion of the entire subject matter program or the passage of the MSAT is required for the credential.

## Supplementary and Additional Teaching Authorizations

After acquiring a basic credential, it is possible to add further teaching authorizations. Students wishing to be authorized in more than one subject area may qualify in either of two ways:

1. Students may complete 30 quarter units (15 units if they are upper-division) in college-level course work to develop a supplementary authorization to teach in areas other than the major teaching area. Consult a counselor in the Department of Education for details.

2. Students may pass the appropriate examinations in any area of their choice and thus qualify for the additional teaching authorization in that subject.

## CLAD/BCLAD EMPHASIS PROGRAM

The California Commission on Teacher Credentialing has adopted new credential regulations to authorize both Single Subject and Multiple Subject teachers to serve the State's growing number of Limited-English-Proficient (LEP) students. In accordance with these new regulations, UCI offers the Crosscultural Language and Academic Development (CLAD) emphasis and the Bilingual Crosscultural Language and Academic Development (BCLAD) emphasis in Spanish. (The CLAD/BCLAD emphasis is not available through the intern program.)

After meeting prerequisites Education 173 and 124, and verification of experience related to a second language, and immediately before the teacher preparation year, CLAD/BCLAD candidates attend a summer seminar and practicum (Education 165, 166, and 167). BCLAD candidates must demonstrate advanced language proficiency in Spanish, complete the CLAD seminar and practicum, and follow the bilingual teaching course requirements.

Upon successful completion of the CLAD/BCLAD summer program and the academic year teacher education program, students are eligible for a preliminary teaching credential with a CLAD/BCLAD emphasis.

## Graduate Degree Programs

### MASTER OF SCIENCE IN CHEMISTRY OR MATHEMATICS WITH A TEACHING CREDENTIAL

In cooperation with the Department of Chemistry and the Department of Mathematics, the Department of Education sponsors coordinated two-year programs leading to the California Single Subject Teaching Credential and a Master of Science degree in Chemistry or Mathematics. Additional information is available from the Department of Education counseling office and the graduate affairs office in the Departments of Chemistry and Mathematics.

### DOCTORAL DEGREE IN EDUCATIONAL ADMINISTRATION

The Department of Education, in cooperation with the School of Education at the University of California, Los Angeles, offers a program leading to the Ed.D. degree in Educational Administration. The Ed.D. program aims to prepare outstanding educational leaders who are able to articulate and accomplish important improvements in educational practice while attending to the complex demographic, social, and economic challenges faced by K-12 education. The program emphasizes a range of social and behavioral science frameworks and research methodologies relevant to scholarship about schooling and has a strong focus on using theory and research to select, orchestrate, and implement useful and effective educational practices.

### Admission Requirements

Applicants submit transcripts, three letters of recommendation, and scores from the General Test of the Graduate Record Examination. Other requirements include samples of written work and demonstrated evidence of potential for leadership in school administration, educational policy, or other fields pertinent to school practice and educational scholarship.

### Program of Study

Course work is covered in three years—including three summers—of study prior to the dissertation. Students enroll for no more than eight units per quarter during the academic year, and most quarters enroll for only six units. All students begin work in the summer.

During the first and second years, all courses are taken at UCI, with the exception that a student may petition to take a substitute course at UCLA. Three quarters of registration will be at UCLA, mainly during the third year. Students admitted to the program are expected to take all courses on schedule.

### First-Year Requirements

**First-year required courses.** During the first academic year, the following courses covering fundamental issues in the study of schooling and educational leadership are required: History of School Innovations and Current Reform Movements (Education 250); Organizational Theory, Planning, and Application (Education 271); Philosophy and Ethics of Educational Leadership (Education 272); Student Assessment (Education 273A); First-Year Seminar (Education 259A); Functional, Interpretive, and Critical Analyses of Schooling (Education 260); School Restructuring and Resource Allocation (Education 277A).

In addition, four required courses introduce students to educational research and evaluation methods and studies: Studies of Professional and Staff Development (Education 274B); Studies of Diversity and Inequality in Education (Education 278B); Research Methods Applied to Administrative Practice (Education 279); Evaluation of Educational Programs (Education 281).

**First-year comprehensive examination.** At the end of the first summer, a comprehensive examination will evaluate students' understanding of the skills and knowledge in educational leadership. Candidates demonstrating marginal performance may be required to retake the examination within three months. Any candidates failing on the second attempt will not be permitted to continue the program.

### Second-Year Requirements

**Second-year required courses.** During the second academic year, the following courses are required: Applications to Education of Social and Psychological Theories and Research (Education 285A-B); Information and Communication Technologies for Administrators (Education 270); Seminar in Field Research in Education (Education 290A-B-C); and Directed Field Research (Education 291A-B-C). A substantial research paper, based on the field research, is required at the end of the second year.

Course requirements for the second summer consist of four units at UCLA and four units at UCI.

### Third-Year Requirements

Third-year study centers on (a) analysis and implementation of educational innovations, (b) research methods, and (c) analysis of critical issues in education. In addition, three four-unit elective courses must be taken in the third year, with at least one of the electives being a course on research or evaluation methods. At least two quarters of work must be done at UCLA during the third year. Students also spend the third year developing a dissertation proposal.

**Oral Qualifying Examination.** In the third year, students take an oral qualifying examination in which they (a) analyze a central issue of educational research and leadership, and (b) make an oral presentation for a possible course of action for that issue, one suitable for proposing to a school district cabinet, school board, state policy body, or similar entity. Issues will be proposed by the student and approved and administered by a five-person candidacy committee. Students who do not pass in the first attempt will have one opportunity to retake the examination within three months. Students unsuccessful at that point will not be advanced to candidacy.

### Advancement to Candidacy

After the completion of all required courses, and passing the first-year written comprehensive examination and the oral qualifying examination, students will advance to candidacy.

### Dissertation

Candidates submit and defend the dissertation proposal at the end of the third year. Research and writing of the dissertation are undertaken in the fourth and fifth years of the program. At the completion of the dissertation work, the doctoral committee conducts a final oral examination during which the candidate defends the dissertation.

### Time Limits

The required program of study is designed to be completed in four to five years. A leave of absence or other exception to the program of study will only be considered under special circumstances.

### 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 Education 100A-B-C.

**101 Secondary School Curriculum (4) F.** An introduction to the historical, social, and philosophical foundations of curriculum design, with attention to the aims and implementation of the several principal curriculum types.

**102A Methods of Teaching Languages other than English in the Secondary Schools (4) F.** Prepares future teachers of foreign language or primary/home language. Emphasizes hands-on, practical strategies for communication-based instruction and authentic assessment, in reading, writing, listening, speaking, and culture.

**102B Teaching Social Science in Secondary School (4) F.** Theories, strategies, and methodologies related to the teaching of history and social science in the secondary school. Emphasis on the planning, delivery, and assessment of lessons reflecting an understanding of the History-Social Science Framework for California.

**102C Teaching English in the Secondary School (4) F.** Introduction to teaching reading, writing, and speaking skills in the secondary school. Emphasis upon an integrative approach to the teaching of literature, composition, and grammar. Practice in the design of lesson plans that are both integrated and cumulative.

**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 Teaching Mathematics in Secondary School (4) F.** Emphasis on overcoming obstacles to learning mathematics using research studies, the California Framework, and recommendations of professional organizations. Integration of mathematics with sciences and language arts. Design of mathematics instruction and developing problem-solving strategies using lab experiments and computers.

**102G Teaching Sciences in Secondary School (4) F.** Introduction to the learning and teaching of science. Theoretical orientation of cognitive psychology is used to introduce phenomena of scientific misconceptions, schema restructuring, and multiple forms of representation. Historical and current approaches to science education, educational technologies, and assessment.

**102H Applied Instructional Strategies in Secondary Schools (1-1) W, S.** Application of pedagogy and research to practice teaching experiences in the secondary schools. A continuation of the Education 102 series with an emphasis on the needs of students with culturally diverse backgrounds. In Progress grading. Pass/Not Pass Only. Corequisites: Education 320A, B, C, D, and E.

**104A Teaching Art, Music, and Physical Education in the Elementary School (2) W.** Issues and practice in integrating California curriculum frameworks topics in elementary art, music, and physical education with an emphasis on multicultural and computer-based resources and teaching strategies in the elementary school.

**105A Curriculum and Methods for Elementary School Reading (2-1-1) F, W, S.** Teaching an integrated reading/language arts program in the elementary classroom. Implementing theories, principles, and methods which are research and reality-based. Creating a child-centered, language-rich program to meet needs of children in multicultural/multilingual settings. Begins fall quarter and continues through winter and spring quarters with in-progress grading.

**105B Reading and Writing in the Middle School and High School Classrooms (4) F.** Emphasis is placed upon understanding the literacy processes (listening, speaking, thinking, reading, and writing) as they relate to all Single Subject areas. Teachers are guided to integrate literacy-related strategies with curriculum-based goals supported in the California State Frameworks.

**106A Curriculum and Methods for Elementary School Reading for Intern Program (4) S, Summer.** Teaching an integrated reading/language arts program in the elementary classroom. Implementing theories, principles, and methods which are research and reality-based. Creating a child-centered, language-rich program to meet needs of children in multicultural-multilingual settings. For students accepted into the Intern Program.

**110A Teaching Social Studies in Elementary School (1-1-1) F, W, S.** 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. Begins fall quarter and continues through winter and spring quarters with in-progress grading.

**110B Teaching Mathematics in Elementary School (1-1-1) F, W, S.** 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. Begins fall quarter and continues through winter and spring quarters with in-progress grading.

**110C Teaching Science in Elementary School (1-1-1) F, W, S.** 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. Begins fall quarter and continues through winter and spring quarters with in-progress grading.

**110D Teaching Language Arts in Elementary School (1-1-1) F, W, S.** 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 as a process and the role of the reading/writing connection in fostering critical thinking. Begins fall quarter and continues through winter and spring quarters with in-progress grading.

**111A Teaching Social Studies in Elementary School for Intern Program (3) S, 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. For students accepted into the Intern Program.

**111B Teaching Mathematics in Elementary School for Intern Program (3) S, 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. For students accepted into the Intern Program.

**111C Teaching Science in Elementary School for Intern Program (3) S, 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. For students accepted into the Intern Program.

**111D Teaching Language Arts in Elementary School for Intern Program (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 as a process and the role of the reading/writing connection in fostering critical thinking. For students accepted into the Intern Program.

**114 Science Education Teacher Apprentice Field Experience (4-4).** 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).** Analysis of educational experiences of American minority groups (Hispanic, African-American, Asian/Pacific Islander, Native American) and women, and related social, cultural, language, and economic issues. Examination of ideas and realities of equity in view of theoretical, historical, and demographic considerations. NOTE: This course is a prerequisite for the CLAD/BCLAD emphasis. (VII-A)

**140A Methods for Elementary Bilingual Teachers (4).** Direct observation of bilingual classrooms in local elementary schools, classroom lectures, discussions, and presentations on the culture and language of the bilingual student. Prerequisite: Spanish 2C or Spanish 5. Same as Spanish 106A.

**140B Methods for Secondary Teachers of Spanish (4).** Communicative approaches to teaching Spanish at the secondary school level. Theory and practice of oral proficiency acquisition techniques. Required field observations. Emphasis placed on training differences for native versus nonnative Spanish speakers. Prerequisite: consent of instructor. Same as Spanish 106B.

**140C 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. Education 140C and Spanish 114 may not both be taken for credit.

**150 Changing the High School Experience (4) S.** Analysis of problems in high school education (e.g., student disengagement and underachievement of disadvantaged) and proposals for changing curriculum, instruction, and school organization. Students suggest own reforms and conduct research (including school observations and interviews) to inform their proposals.

**152F Teaching Mathematics with Technology (4) W.** A survey of the capabilities of mathematics software. Instructional design using technology in demonstration stations, lab explorations, workstations, and group work. Implications of the use of software to change the dynamics of teaching and learning of mathematics. Prerequisites: Mathematics 2A-B-C and Education 102F, or consent of instructor.

**160 Practicum in After-School Learning and Inquiry (4) F, W, S.** Prepares students to work with children in after-school, technology-based learning programs at community centers. This experiential learning with children then informs student inquiries on issues of multiculturalism, schooling, and literacy development as reported in weekly field notes.

**162 Mainstreaming Special and General Education (4) F, W, S, Summer.** Analysis of legal requirements and educational issues surrounding the integration of special and general education; framework and strategies for establishing mainstreaming teams of regular teachers, special education teachers, and school administrators; methods for teaching mainstreamed students in regular classrooms.

**165 Theories and Research on First- and Second-Language Acquisition in School Contexts (4) Summer.** Part of the CLAD Summer Seminar and Practicum. Provides BCLAD credential-emphasis candidates with a thorough grounding in theories and research on first- and second-language acquisition as they address issues of teaching and learning in school contexts. Corequisites: Education 166 and 167. Prerequisites: Education 124 and 173.

**166 Methodology of Bilingual, English Language Development (ELD), and Specially Designed Academic Instruction in English (SDAIE) (4) Summer.** Part of the CLAD Summer Seminar and Practicum. Focuses on methods, implementation issues, and program models for bilingual or primary language instruction, English language development (ELD) and ESL, LEP assessment, and Specially Designed Academic Instruction in English (SDAIE). Corequisites: Education 165 and 167. Prerequisites: Education 124 and 173.

**167 Practicum in Cultural Studies and Field Experiences in Diverse School and Community Settings (4) Summer.** The Practicum of the CLAD Summer Seminar. Presents BCLAD candidates with hands-on applications for research, cross-cultural inquiry, and service, through community experiences that should increase their understanding of the cultural factors that affect students' school success and learning. Corequisites: Education 165 and 166. Prerequisites: Education 124 and 173.

**171 The Family-School Boundary (4) S.** Exploration of the family-school relationship, particularly how it mediates cultural and socioeconomic diversity. Coverage of roles, responsibilities, values of families versus schools. Topics include building social/cultural capital through parent involvement, cultural compatibility, educational policies affecting family-school interactions. (VII-A)

**172F Learning Mathematics: Theory and Practice (4) S.** Application of cognitive theories to issues in mathematics learning and instruction. Attention given to representation of mathematical knowledge, skill acquisition, and approaches to problem solving.

**173 Learning Theory and Classroom Practices (4) F, W, S, Summer.** Theories of development, learning, personality, motivation, and instruction are applied to understanding educational needs of children and adolescents from all cultural, linguistic, and socioeconomic backgrounds. Applications to teaching and learning strategies, student assessment, and classroom management are examined. NOTE: This course is a prerequisite that must be taken before entering the teacher credential program and is also a prerequisite for the CLAD/BCLAD emphasis.

**174 Observation and Literacy Assessment in Diverse Schools (3) F.** Future teachers engage in independent inquiry, research, observation, and personal interactions as they collaborate on field assessment projects with community organizations representing diverse cultural, linguistic, ethnic, and racial groups. Formerly Education 105LA, 105LB, 174B.

**176 Psychology of Learning, Abilities, and Intelligence (4) S.** Overview of classic positions on the mind, human abilities, and intelligence, especially as related to academic achievement. Contrasting views: psychometric versus information processing; experimental versus correlational research. Prerequisite: introductory course in psychology, or consent of instructor. This course may substitute for Education 173 in the teacher credential program.

**179 Advanced Composition for Teachers (4).** Principles of formal composition and problems of teaching. Selecting handbooks and ancillary reading, marking papers, making assignments, and conducting workshops and tutorials. Same as English and Comparative Literature WR179.

**180 Preparation for Intern Teaching in the Secondary Schools (4) S.** Secondary curriculum and methodology, including instructional planning, teaching strategies, classroom management, evaluation, cultural and linguistic considerations and interpersonal skills. Application of these to fieldwork experience for intern candidates in preparation for responsibilities assumed during internship year.

**182J Peer Health Education (3) F.** Teaches principles of peer health education for a variety of preventative health education topics of particular concern to the collegiate population, including: HIV-AIDS and sexually transmitted diseases, birth control, nutrition, eating disorders, fitness, stress management, common illnesses, cancer, heart disease.

**182K Practicum in Peer Health Education I (3) W.** Provides educational opportunities for peer health advisors to implement and evaluate their health programs, events, and activities while attending weekly seminars on a variety of health topics and issues. Students plan, implement, and evaluate campus-wide events. Prerequisite: Education 182J.

**182L Practicum in Peer Health Education II (3) S.** Provides opportunities for peer health advisors to plan, implement, and evaluate health programs, events, and activities, including the annual Peer Health Fair. Weekly seminars and field trips. Prerequisite: Education 182K.

**183 Preparation for Intern Teaching in the Elementary Schools (4) S.** Elementary curriculum and methodology, including instructional planning, teaching strategies, classroom management, evaluation, cultural and linguistic considerations, and interpersonal skills. Application of these to fieldwork experience for intern candidates in preparation for responsibilities assumed during internship year.

**184A Directed Field Experiences (4) S.** 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.

**187 The Psychology of Individualized Instruction (4).** Designed to enhance the effectiveness of tutors/teachers in their interaction with undergraduate students in one-to-one and group/class settings. Emphasis on developing techniques for the facilitation of independent learning by students. Explores various diagnosis and delivery techniques.

**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).** 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).** 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.

**250 History of School Innovations and Current School Reform Movements (4) W.** Offers an analysis of major school reform movements, both ongoing and those from the past century. Study of the underlying dynamics affecting the interrelationship between schools and society and the implications of these relationships. Prerequisite: doctoral degree candidate or consent of instructor.

**259A First-Year Seminar (2) F, Summer.** Graduate seminar for entering Ed.D. students. Employment of skills such as conducting literature reviews, types and styles of writing, use of the Internet. Also examines different issues related to educational research and methodologies. Open to doctoral degree candidates only.

**260 Functional, Interpretive, and Critical Analyses of Schooling (4) F, Summer.** Understanding the processes of schooling from functional, interpretive, and critical perspectives. Study of paradigms in educational administration research and practice. Review of conceptual orientation to the study of educational administration. History of the knowledge base of educational administration. Open to doctoral degree candidates only.

**270 Information and Communication Technologies for Administrators (4) S.** Provides practical and intellectual expertise about instructional software, video and multimedia technologies, computer literacy education, electronic communication networks, and technology for school and district administration. Prerequisite: Preliminary Administrative Services Credential.

**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 Philosophy and Ethics of Educational Leadership (4) F, W.** Philosophy, ethics, and moral values of educational leadership for school administrators. Theory and philosophy of educational change. Research about ethical and moral leadership in schools. Open to Professional Administrative Services Credential candidates or doctoral degree candidates only.

**273A Student Assessment (2) S.** Purposes for conducting educational assessment. Overview of new assessments, including complex constructed responses, portfolios, other "authentic" measurements. How assessment can help to monitor and strengthen educational programs and inform educational policy. Prerequisite: Preliminary Administrative Services Credential. Open to Professional Administrative Services Credential candidates or doctoral degree candidates.

**274A Professional and Staff Development (2) W.** 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. Open to Professional Administrative Services Credential candidates or doctoral degree candidates.

**274B Studies of Professional and Staff Development (4) F.** Research and theory of effective strategies for professional and staff development. Topics include: adult learning as related to professional growth of teachers, staff development as vehicle for systemic reform, reforms to enhance teacher professionalization and empowerment. Open to doctoral degree students only.

**275A School Law and Political Relations (2) F.** Legal framework of schools and public education. Political jurisdictions affecting educational policy and 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. Open to Professional Administrative Services Credential candidates or doctoral degree candidates only.



**276A Fiscal Management at the Site and District Level (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. Open to Professional Administrative Services Credential candidates or doctoral degree candidates only.

**276B Studies of School Finance and Political Economy (2) F.** Fundamental fiscal concepts applied to schooling. Topics include equity and inequalities in resource allocation, public school revenue sources and expenditure patterns, the politics of school finance, public versus private-sector supply of schooling, and the supply and demand for teachers. Doctoral degree candidates only.

**277A School Restructuring and Resource Allocation (2) W, S.** Concepts and research on school change at the site level. Topics include: structure and use of physical environment, organization of school day and use of time, use of teachers and other staff, changes in governance and school-community relations. Open to Professional Administrative Services Credential candidates or doctoral degree candidates only.

**278A 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. Open to Professional Administrative Services Credential candidates or doctoral degree candidates only.

**278B Studies of Diversity and Inequality in Education (2) Summer.** Study of relationships between individual diversity, social inequality, and education. How differences in socioeconomic status, race, culture, and gender translate in the educational process and affect educational outcomes. Addresses issues such as educational access, social mobility, and social reproduction. Doctoral degree students only.

**279 Research Applied to Administrative Practice (4) 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.

**280 Special Topics in Education (4) S.** Provides practitioners at the advanced degree level with insight and leadership skills for working with increasingly diverse school populations. Content varies with interest of the instructor. May focus on specific populations or broader content area such as education reform in California. Doctoral degree students only. May be taken for credit two times as topics vary.

**281 Evaluation of Educational Programs (4) F, W, Summer.** Alternative approaches to formative and summative evaluation of educational programs. Standards for effective evaluations. Epistemological, political, and practical issues in designing and conducting evaluations. Students critique specific studies relevant to educational administration and policy-making and design an evaluation. Corequisite: Education 279. Doctoral degree students only. Formerly Education 273B.

**285A-B Applications to Education of Social and Psychological Theories and Research Methods (4-4) F, W.** Sociological and psychological theories and research applicable to issues facing school administrators. Theories of learning and of individual, social, and organizational behavior. Research about social context of schools, human development, cognition, motivation. Studies of student behavior, classroom practices, school organization. Prerequisite: Education 279 and 281. Doctoral degree students only.

**290A-B-C Seminar in Field Research in Education (1-1-1) F, W, S.** Addresses conceptual frameworks and literature relevant to effective school leadership and management. Focus on identifying, carrying out, analyzing and interpreting field research in education toward the purpose of improving school practice. Prerequisite: concurrent enrollment in 291A-B-C. Doctoral degree students only.

**291A-B-C Directed Field Research in Educational Administration (3-3-3) F, W, S.** Research in settings such as school sites, districts, county departments of education, and other K-12 educational agencies. Integration of educational administration knowledge with a range of analytic tools in designing and conducting a significant field research project. Corequisite: concurrent enrollment in Education 290A-B-C. Doctoral degree students only.

**300A-B-C-D-E Student Teaching in the Elementary School (4-4-4-4-4) W, S.** Student teaching experiences to include orientation, University seminars, and preparation for classroom instructional responsibilities in accordance with State credentialing requirements and in conjunction with second semester of public school calendar. Education 300A-B is for 10 weeks, four days a week; Education 300C-D-E is for 10 weeks, five days a week until the end of the public school year.

**300F Elementary Student Teaching: Special Assignment (4).** Student teaching assignment by special arrangement with program coordinator and the director.

**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) W, 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) W, 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 Single 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.

**302LB 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 single subject classroom. Corequisite: Education 302B. Prerequisites: Education 302A and 302LA.

**310A-B-C-D-E-F-G-H-I Intern Teaching in the Elementary School: Multiple Subject Instruction (4-4-4-4-4-4-4-4-4) 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 Student Teaching in Intermediate/Secondary School (4-4-4-4)** W, S. Student teaching experience to include orientation, seminars, and preparation for secondary school classroom instructional responsibilities in accordance with State credentialing requirements and in conjunction with the public school calendar.

**320F Secondary Student Teaching: Special Assignment (4).** Student teaching experience by special arrangement with the program coordinator and the director.

**330A-B-C-D-E-F-G-H-I Intern Teaching in the Secondary School: Single Subject Instruction (4-4-4-4-4-4-4-4-4)** 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.

**350 Supervision of Classroom Teaching (4).** The nature of instructional supervision and the role of the supervisor. Various theories and approaches related to improvement of teaching and instructional program. Aptitudes and attitudes related to effective supervision. Differences between evaluation and supervision. Prerequisite: admission to Preliminary Administrative Services Credential program and completion of 36 postbaccalaureate units and teaching credential.

**353 Techniques of Personnel Administration (4).** 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/misassignment, reduction in force, dismissal, supervision, and evaluation. Prerequisite: admission to Preliminary Administrative Services Credential program and completion of 36 postbaccalaureate units and teaching credential.

**354 Governance, Organization, and Administration of Public Schools (4).** 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 Preliminary Administrative Services Credential program and completion of 36 postbaccalaureate units and teaching credential.

**355 School Management in a Community Setting (4).** School management, problem solving, decision making. Role of staff, community (including minorities) in assessing needs, establishing/implementing action plans. Management of support systems, internal/external communications, application of information technology. Conflict resolution, stress management, school site councils, community relations, parent involvement. Prerequisite: admission to Preliminary 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.

**370D-E-F Supervised Teaching in Bilingual Education, Secondary (4-4-4)** F, W, S. Student teaching experiences in bilingual public school classrooms to include orientation, regular seminars, and preparation for bilingual classroom instructional responsibilities in accordance with State credentialing requirements and in conjunction with the public school calendar. Prerequisites: Education 165, 166, and 167; open only to teacher credential students.

**379 U.S. Government for Teachers (4).** 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) W, Summer.** Fulfills State requirements for teachers in the area of health education. Includes an introduction to the health status of the elementary and secondary child, school health services, special health concerns, CPR training, and health resources.

**390 Curriculum Design and Management in Public Schools (4).** Historical and contemporary principles of curriculum development. Basis for curriculum decisions: theories and techniques of curriculum planning. Development of educational programs: multicultural and socioeconomic considerations, evaluation, and staff development. Principles of curricular alignment including delivery, materials, and assessment. Prerequisite: admission to Preliminary Administrative Services Credential program and completion of 36 postbaccalaureate units and teaching credential.

**391 Educational Leadership (4).** Theories of leadership, organizational behavior, judgment, and decision making. Comparison of management and leadership perspectives. Role of the leader in various contexts. Analysis of approaches to issues such as decentralization, the change process, and student rights. Prerequisite: admission to Preliminary 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, e.g., vouchers. Sources and basis of revenue. Financial planning, budgeting, and expenditure programs. Other functions associated with the conduct of 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).** 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., Professional Administrative Services.

# SCHOOL OF ENGINEERING

Allen R. Stubberud, **Dean (Acting)**

305 Rockwell Engineering Center  
Undergraduate Counseling: (714) 824-4334  
Graduate Counseling: (714) 824-6475  
World Wide Web: <http://www.eng.uci.edu/>

Alfredo H.-S. Ang, Ph.D. University of Illinois, Urbana, *Professor of Civil Engineering*, Registered Structural Engineer

Paul D. Arthur, Ph.D. California Institute of Technology, *Professor Emeritus of Mechanical and Aerospace Engineering*, Registered Professional Engineer

Nader Bagherzadeh, Ph.D. University of Texas at Austin, *Associate Professor of Electrical and Computer Engineering and of Information and Computer Science*

Casper W. Barnes, Jr., Ph.D. Stanford University, *Professor Emeritus of Electrical and Computer Engineering*

Neil J. Bershad, Ph.D. Rensselaer Polytechnic Institute, *Professor Emeritus of Electrical and Computer Engineering*

Lubomir Bic, Ph.D. University of California, Irvine, *Professor of Information and Computer Science and of Electrical and Computer Engineering*

Douglas M. Blough, Ph.D. The Johns Hopkins University, *Associate Professor of Electrical and Computer Engineering and of Information and Computer Science*

James E. Bobrow, Ph.D. University of California, Los Angeles, *Associate Professor of Mechanical and Aerospace Engineering*

Constantinos V. Chrysikopoulos, Ph.D. Stanford University, *Assistant Professor of Civil and Environmental Engineering*

Jose B. Cruz, Jr., Ph.D. University of Illinois, Urbana-Champaign, *Professor Emeritus of Electrical and Computer Engineering*, Registered Professional Engineer

Donald A. Dabdub, Ph.D. California Institute of Technology, *Assistant Professor of Mechanical and Environmental Engineering*

Nancy A. DaSilva, Ph.D. California Institute of Technology, *Associate Professor of Chemical and Biochemical Engineering*

Rui J. P. de Figueiredo, Ph.D. Harvard University, *Professor of Electrical and Computer Engineering and of Mathematics*

Derek Dunn-Rankin, Ph.D. University of California, Berkeley, *Associate Professor of Mechanical and Aerospace Engineering*

Nikil D. Dutt, Ph.D. University of Illinois, *Associate Professor of Information and Computer Science and of Electrical and Computer Engineering*

James C. Earthman, Ph.D. Stanford University, *Associate Professor of Chemical and Biochemical Engineering*

Donald K. Edwards, Ph.D. University of California, Berkeley, *Professor Emeritus of Mechanical and Aerospace Engineering*, Registered Professional Engineer

Said E. Elghobashi, Ph.D. Imperial College, University of London, *Professor of Mechanical and Aerospace Engineering*

Maria Q. Feng, Ph.D. University of Tokyo, *Assistant Professor of Civil Engineering*

Leonard Ferrari, Ph.D. University of California, Irvine, *Professor of Electrical and Computer Engineering*

Carl A. Friehe, Ph.D. Stanford University, *Professor of Mechanical and Aerospace Engineering and of Earth System Science*

Daniel D. Gajski, Ph.D. University of Pennsylvania, *Professor of Information and Computer Science and of Electrical and Computer Engineering*

Ian A. Galton, Ph.D. California Institute of Technology, *Assistant Professor of Electrical and Computer Engineering*

Hideya Gamo, D.Sc. University of Tokyo, *Professor Emeritus of Electrical and Computer Engineering*

Steven C. George, M.D. University of Missouri, Ph.D. University of Washington, *Assistant Professor of Chemical and Biochemical Engineering*

Stanley B. Grant, Ph.D. California Institute of Technology, *Assistant Professor of Environmental Engineering*

Gary L. Guymon, Ph.D. University of California, Davis, *Professor Emeritus of Civil Engineering*, Registered Professional Engineer

Medhat A. Haroun, Ph.D. California Institute of Technology, *Professor of Civil Engineering*, Registered Professional Engineer

G. Wesley Hatfield, Ph.D. Purdue University, *Professor of Microbiology and Molecular Genetics and of Biochemical Engineering*

Glenn E. Healey, Ph.D. Stanford University, *Associate Professor of Electrical and Computer Engineering*

Daniel Hirschberg, Ph.D. Princeton University, *Professor of Information and Computer Science and of Electrical and Computer Engineering*

Juan Hong, Ph.D. Purdue University, *Professor of Chemical and Biochemical Engineering*

Faryar Jabbari, Ph.D. University of California, Los Angeles, *Associate Professor of Mechanical and Aerospace Engineering*

R. (Jay) Jayakrishnan, Ph.D. University of Texas at Austin, *Assistant Professor of Civil Engineering*

K. H. (Kane) Kim, Ph.D. University of California, Berkeley, *Professor of Electrical and Computer Engineering and of Information and Computer Science*

Fadi Kurdahi, Ph.D. University of Southern California, *Associate Professor of Electrical and Computer Engineering and of Information and Computer Science*

Tomas Lang, Ph.D. Stanford University, *Professor of Electrical and Computer Engineering and of Information and Computer Science*

John C. LaRue, Ph.D. University of California, San Diego, *Associate Dean for Undergraduate Affairs of the School of Engineering and Associate Professor of Mechanical and Aerospace Engineering*

Enrique J. Laverman, Ph.D. Massachusetts Institute of Technology, *Professor of Chemical and Biochemical Engineering and of Mechanical and Aerospace Engineering*

Chin C. Lee, Ph.D. Carnegie-Mellon University, *Professor of Electrical and Computer Engineering*

Henry P. Lee, Ph.D. University of California, Berkeley, *Assistant Professor of Electrical and Computer Engineering*

Guann Pyng Li, Ph.D. University of California, Los Angeles, *Professor of Electrical and Computer Engineering*

Henry C. Lim, Ph.D. Northwestern University, *Department Chair and Professor of Chemical and Biochemical Engineering*

Kwei-Jay Lin, Ph.D. University of Maryland, *Associate Professor of Electrical and Computer Engineering and of Information and Computer Science*

Feng Liu, Ph.D. Princeton University, *Assistant Professor of Mechanical and Aerospace Engineering*

J. Michael McCarthy, Ph.D. Stanford University, *Professor of Mechanical and Aerospace Engineering*

Michael G. McNally, Ph.D. University of California, Irvine, *Associate Professor of Civil and Environmental Engineering*

Kenneth D. Mease, Ph.D. University of Southern California, *Associate Professor of Mechanical and Aerospace Engineering*

Martha L. McCartney, Ph.D. Stanford University, *Associate Professor of Materials Science and Engineering*

Farghalli A. Mohamed, Ph.D. University of California, Berkeley, *Professor of Chemical and Biochemical Engineering*

Orhan Nalcioğlu, Ph.D. University of Oregon, *Professor of Radiological Sciences, Medicine, Electrical and Computer Engineering, and Physics and Astronomy*

Richard D. Nelson, Ph.D. Michigan State University, *Adjunct Professor of Electrical and Computer Engineering*

Alexandru Nicolau, Ph.D. Yale University, *Professor of Information and Computer Science and of Electrical and Computer Engineering*

Betty H. Olson, Ph.D. University of California, Berkeley, *Professor of Social Ecology, Biochemical Engineering, and Community and Environmental Medicine*

Terese M. Olson, Ph.D. California Institute of Technology, *Associate Professor of Civil and Environmental Engineering*

Melissa E. Orme, Ph.D. University of Southern California, *Assistant Professor of Mechanical and Aerospace Engineering*

Dimitri Papamoschou, Ph.D. California Institute of Technology, *Associate Professor of Mechanical and Aerospace Engineering*

Gerard C. Pardo, Ph.D. Stanford University, *Professor of Civil Engineering*, Registered Professional Engineer

Jose A. Pires, Ph.D. University of Illinois, Urbana, *Assistant Professor of Civil Engineering*

Roger H. Rangel, Ph.D. University of California, Berkeley, *Associate Professor of Mechanical and Aerospace Engineering, and of Chemical and Biochemical Engineering and Materials Science*

Wilfred W. Recker, Ph.D. Carnegie-Mellon University, *Professor of Civil Engineering and Director, Institute of Transportation Studies*  
 Stephen G. Ritchie, Ph.D. Cornell University, *Department Chair and Professor of Civil Engineering*  
 G. Scott Samuels, Ph.D. University of California, Berkeley, *Professor of Mechanical, Aerospace, and Environmental Engineering, Registered Professional Engineer*  
 Robert M. Saunders, D.Eng. Tokyo Institute of Technology, *Professor Emeritus of Electrical Engineering, Registered Professional Engineer*  
 Jan Scherfig, Ph.D. University of California, Berkeley, *Professor Emeritus of Civil Engineering, Registered Professional Engineer*  
 Isaac Scherson, Ph.D. Weizman Institute of Science, *Professor of Information and Computer Science and Electrical and Computer Engineering*  
 Roland Schinzinger, Ph.D. University of California, Berkeley, *Professor Emeritus of Electrical and Computer Engineering, Registered Professional Engineer*  
 William E. Schmitendorf, Ph.D. Purdue University, *Associate Dean for Graduate Affairs of the School of Engineering, Department Chair, and Professor of Mechanical and Aerospace Engineering*  
 Robin Shepherd, Ph.D. University of Canterbury; D.Sc. University of Leeds, *Professor Emeritus of Civil Engineering, Registered Professional Engineer*  
 Phillip C.-Y. Sheu, Ph.D. University of California, Berkeley, *Associate Professor of Electrical and Computer Engineering and of Information and Computer Science*  
 Frank G. Shi, Ph.D. California Institute of Technology, *Assistant Professor of Chemical and Materials Engineering*  
 Athanasios Sideris, Ph.D. University of Southern California, *Associate Professor of Mechanical and Aerospace Engineering*  
 William A. Sirignano, Ph.D. Princeton University, *Professor of Mechanical and Aerospace Engineering, and of Chemical and Biochemical Engineering and Materials Science*  
 Kai-Yeung (Sunny) Siu, Ph.D. Stanford University, *Assistant Professor of Electrical and Computer Engineering*  
 Harry Skinner, M.D. University of South Carolina, Ph.D. University of California, Berkeley, *Department Chair and Professor of Orthopedic Surgery, and Professor of Mechanical and Aerospace Engineering*  
 Jack Sklansky, D.Sc. Columbia University, *Professor Emeritus of Electrical and Computer Engineering, Registered Professional Engineer*  
 Keyue M. Smedley, Ph.D. California Institute of Technology, *Assistant Professor of Electrical and Computer Engineering*  
 Gregory J. Sonek, Ph.D. Cornell University, *Associate Professor of Electrical and Computer Engineering*  
 Allen R. Stubberud, Ph.D. University of California, Los Angeles, *Dean (Acting) of the School of Engineering, Department Chair and Professor of Electrical and Computer Engineering, Registered Professional Engineer*  
 Tatsuya Suda, Ph.D. Kyoto University, *Professor of Information and Computer Science and of Electrical and Computer Engineering*  
 Andrew J. Szeri, Ph.D. Cornell University, *Associate Professor of Mechanical and Aerospace Engineering*  
 Harry H. Tan, Ph.D. University of California, Los Angeles, *Associate Professor of Electrical and Computer Engineering*  
 Edriss Titi, Ph.D. Indiana University, *Associate Professor of Mathematics and of Mechanical and Aerospace Engineering*  
 Chen S. Tsai, Ph.D. Stanford University, *Professor of Electrical and Computer Engineering*  
 Wei Kang (Kevin) Tsai, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Electrical and Computer Engineering*  
 Roberto Villaverde, Ph.D. University of Illinois, Urbana, *Associate Professor of Civil Engineering, Registered Professional Engineer*  
 Frederic Yui-Ming Wan, Ph.D. Massachusetts Institute of Technology, *Vice Chancellor for Research and Dean of Graduate Studies, and Professor of Mathematics and Mechanical and Aerospace Engineering*  
 Jeffrey B. Wolfenstine, Ph.D. Cornell University, *Assistant Professor of Chemical and Biochemical Engineering*  
 Thomas K. Wood, Ph.D. North Carolina State University, *Assistant Professor of Biochemical and Environmental Engineering*  
 Jann-Nan Yang, D.Sc. Columbia University, *Professor of Civil Engineering, Registered Professional Engineer*  
 Rainer Zuleeg, D.Sc. University of Tohoku, *Adjunct Professor of Electrical and Computer Engineering*

### Lecturers

Syed Ahmed, Ph.D. University of California, Irvine, *Lecturer in Electrical and Computer Engineering*

Donald J. Barrus, B.S. Tulane University, *Lecturer in Mechanical and Aerospace Engineering, Registered Professional Engineer*  
 Ludi Billings, Ph.D. University of California, Irvine, *Lecturer in Civil Engineering*  
 Maqsood Chaudhry, Ph.D. University of California, Irvine, *Lecturer in Electrical and Computer Engineering*  
 David J. Dimas, Ph.D. University of California, Irvine, *Lecturer in Mechanical and Aerospace Engineering*  
 Martin J. Dowd, Ph.D. University of Toronto, *Lecturer in Electrical and Computer Engineering*  
 Ali El-Zeiny, Ph.D. University of California, Irvine, *Lecturer in Civil Engineering*  
 Eugene J. Evancoe, M.S. University of California, Berkeley, *Lecturer in Mechanical and Aerospace Engineering*  
 L. James Ewing, Jr., M.S. University of California, Irvine, *Lecturer in Civil and Environmental Engineering, Registered Professional Engineer*  
 Joseph W. Foraker, M.S. University of Kansas, *Lecturer in Engineering*  
 Eileen Forrester, B.S. California State University, Fresno, *Lecturer in Civil Engineering*  
 Ulysses F. Gonzales, Ph.D. Cornell University, *Lecturer in Civil Engineering and in Mechanical Engineering*  
 James Howard, Ph.D. Indiana University, *Lecturer in Civil and Environmental Engineering*  
 Robert Lavoie, J.D. Warren State University, *Lecturer in Civil and Environmental Engineering*  
 Scott Napp, Ph.D. University of California, Irvine, *Lecturer in Chemical and Biochemical Engineering*  
 Uzoma Okereke, Ph.D. University of California, Los Angeles, *Lecturer in Civil and Environmental Engineering*  
 Hai N. Phan, M.S. California State University, Fullerton, *Lecturer in Mechanical and Aerospace Engineering*  
 Bruce Phillips, M.S. University of Southern California, *Lecturer in Civil and Environmental Engineering, Registered Professional Engineer*  
 Rodney Pimentel, B.S. University of California, Berkeley, *Lecturer in Civil Engineering*  
 Richard O. Richter, Ph.D. University of Notre Dame, *Lecturer in Civil Engineering*  
 Glenn R. Roquemore, Ph.D. University of Nevada, *Lecturer in Civil and Environmental Engineering*  
 Mohammed S. Santana, Ph.D. University of California, Irvine, *Lecturer in Electrical and Computer Engineering*  
 W. H. Scholz, Ph.D. University of Oklahoma, *Lecturer in Civil Engineering*  
 John G. Stupar, E.M.B.A. Claremont Graduate School, *Lecturer in Engineering*  
 Scott Taylor, M.S. California State University, Long Beach, *Lecturer in Civil and Environmental Engineering, Registered Professional Engineer*  
 John Tracy, Ph.D. University of California, Irvine, *Lecturer in Civil Engineering*  
 Alan Williams, Ph.D. Leeds University (United Kingdom), *Lecturer in Civil Engineering*

### Overview

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 Aerospace Engineering (AE), Chemical Engineering (ChE), Civil Engineering (CE), Computer Engineering (CpE), Electrical Engineering (EE), Engineering (a general program, GE), Environmental Engineering (EnE), and Mechanical Engineering (ME). The majors in Aerospace, Chemical, Civil, Computer, Electrical, and Mechanical Engineering are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology.

Aerospace Engineering considers the flight characteristics, performance, and design of aircraft and spacecraft. An upper-division series of courses in aerodynamics, propulsion, structures, and control follows a common core with Mechanical Engineering. The

skills acquired in those courses are integrated in the capstone aerospace design course. The intent of the program is to produce highly proficient engineers who can tackle the aerospace engineering challenges of the future. See pages 180–185.

Chemical Engineering applies the knowledge of chemistry, mathematics, physics, biology, and humanities to solve societal problems in areas such as energy, health, the environment, food, textiles, shelter, and materials. Employment opportunities exist in various industries such as chemical, petroleum, polymer, pharmaceutical, food, textile, fuel, consumer products, and materials. See pages 161–164.

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. See pages 165–170.

The undergraduate curriculum in Computer Engineering addresses the design and analysis of digital computers, including both software and hardware. Computer design includes topics such as computer architecture, VLSI circuits, design automation, system software, and data structures and algorithms. Courses include programming in high-level languages such as Pascal, C, FORTRAN; use of software packages for analysis and design; design of system software such as editors, compilers, debuggers, and operating systems; application of computers in solving engineering problems, and laboratories in both hardware and software experiences. See pages 173–179.

Electrical Engineering is one of the major contributors to the modernization of our society. Many of the most basic and pervasive products and services are either based on or related to the scientific and engineering principles taught at the Department of Electrical and Computer Engineering. Students can specialize in four general areas of studies—Electro-optics and Solid-State Devices, Microelectronics Systems Manufacturing, Power Systems, and Systems and Signal Processing—all at the forefront of technological advancement. See pages 173–179.

The major in Engineering is a special program of study for upper-division students who wish to combine the study of engineering principles with other areas such as the physical and biological sciences, social and behavioral science, humanities, and arts. Students may construct their own specialization. See pages 156–158.

Environmental Engineering concerns the development of strategies to control and minimize pollutant emissions, to treat waste, and to remediate polluted natural systems. Emphasis areas include water quality, air quality and combustion, and water resources engineering. See pages 165–170.

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. See pages 180–185.

Graduate study is offered leading to the M.S. and Ph.D. degrees in Chemical and Biochemical Engineering; Civil Engineering; Electrical and Computer Engineering with concentrations in Electrical Engineering and in Computer Engineering; Engineering, with concentrations in Environmental Engineering, Materials Science and Engineering, and Protein Engineering Science; and Mechanical and Aerospace Engineering. Specialized research opportunities are available within each of these programs. Bioreaction and bioreactor engineering, recombinant cell technology, and bioseparation processes are research areas in Biochemical Engineering. In Civil Engineering, research opportunities are provided in structural/earthquake engineering, reliability engineering, transportation systems engineering, environmental engineering, and water resources.

Research opportunities in Electrical and Computer Engineering are available in the areas of 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 and Aerospace Engineering.

Additional publications describing undergraduate and graduate academic study and research opportunities are available through the School of Engineering, and the Departments of Chemical and Biochemical Engineering, Civil and Environmental Engineering, Electrical and Computer Engineering, Mechanical and Aerospace Engineering, and the graduate program in Protein Engineering.

## DEGREES

Aerospace Engineering .....	B.S.
Chemical and Biochemical Engineering .....	M.S., Ph.D.
Chemical Engineering .....	B.S.
Civil Engineering .....	B.S., M.S., Ph.D.
Computer Engineering .....	B.S.
Electrical and Computer Engineering .....	M.S., Ph.D.
Electrical Engineering .....	B.S.
Engineering .....	B.S., M.S., Ph.D.
Environmental Engineering .....	B.S.
Mechanical and Aerospace Engineering .....	M.S., Ph.D.
Mechanical Engineering .....	B.S.

## UNDERGRADUATE PROGRAM

Undergraduate Student Affairs Office  
101 Engineering and Computing Trailer; (714) 824-4334  
John LaRue, Associate Dean

## PLANNING A PROGRAM OF STUDY

### Advising

Academic advising is available from academic counselors and peer advisors in the School's Undergraduate Student Affairs Office, 101 Engineering and Computing Trailer, and from faculty advisors. *Students must realize, however, that ultimately they alone are responsible for the planning of their own program and for satisfactory completion of the graduation requirements.* Students are encouraged to consult with the academic counselors in the Engineering Undergraduate Student Affairs Office whenever they desire to change their program of study. All Engineering majors are required to meet with their faculty advisor at least once each year.

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 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 courses which do not fulfill the major requirements and the breadth courses (*except* for courses taken in fulfillment of the UCI Subject A and upper-division writing requirements).

### 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, 1997 must have submitted their completed application forms during the priority filing period (November 1-30, 1996).

**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 I and three SAT II examination scores by mid-January, 1997. 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 should 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 and lower-division requirements as possible 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, 101 Engineering and Computing Trailer, (714) 824-4334, 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.

## CAREER ADVISING

The Career and Life Planning 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 and Life Planning Center section for additional information. In addition, special career planning events are held throughout the year including an annual Career Fair. Individual career counseling is available, and students have access to the Career Library which contains information on graduate and professional schools in engineering, as well as general career information.

## HONORS

**Graduation with Honors.** Undergraduate honors at graduation in the School of Engineering are computed by using 50 percent of the overall UCI GPA and 50 percent of the upper-division Engineering GPA. (Engineering E190 is not used in the calculation of the upper-division GPA.) A general criterion is that students must have completed at least 72 units in residence at a University of California campus. Approximately 1 percent of the graduating class shall be awarded *summa cum laude*, 3 percent *magna cum laude*, and 8 percent *cum laude*, with no more than 12 percent being awarded honors. Other important factors are considered (see page 55).

**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.

**Excellence in Engineering Research Award.** Undergraduates who have successfully completed the requirements for this program are presented with Excellence in Engineering Research certificates.

**Engineering Alumni Society Outstanding Engineering Student Scholarship.** Awarded each year to a junior engineering student, this scholarship is based on academic excellence, extracurricular activities, work experience and community service, and communication skills. Two second-place awards are also given.

**Gregory Bogaczyk Memorial Scholarship.** This scholarship was established in memory of Gregory Bogaczyk, a former UCI Mechanical Engineering student, and is contributed by the Bogaczyk family and friends. An award is given each year to a junior or senior Mechanical Engineering student.

**Gable Memorial Scholarship.** This scholarship was established in memory of Theodore Gable, a former Civil Engineering student, and is awarded each year to a junior Civil Engineering student based on academic achievement, intent to finish a B.S. degree in Civil Engineering at UCI, and potential for success as an engineer.

**Hembd Memorial Scholarship.** Established in memory of Scott Hembd, a former Electrical Engineering student, this scholarship is awarded each year to a continuing UCI junior Electrical Engineering student based on academic achievement. The recipient must demonstrate a commitment to complete the academic preparation necessary to pursue a career as an engineer.

**Deborah and Peter Pardo Memorial Scholarship.** This scholarship is awarded each year to a graduating senior Mechanical Engineering student and is based on outstanding service to the School and community.

**Rockwell International Minority Award.** Rockwell International Corporation has established this award to assist in the retention of minority students in the field of engineering. The award is based on academic achievement and a required one-page essay.

Additional awards in other categories are made throughout the academic year.

## SPECIAL PROGRAMS AND COURSES

### Campuswide Honors Program

The Campuswide Honors Program is available to selected high-achieving students from all academic majors from their freshman through senior years. Additional information is available from the Campuswide Honors Program; telephone (714) 824-5461.

### Energy Scholars Program (ESP)

ESP is a unique, comprehensive program which helps prepare future engineers to address the nation's current and projected energy problems. ESP, which has been sponsored by the U.S. Department of Energy, is open to qualified Engineering students.

This challenging academic program has supported 10 new freshmen Energy Scholars every year while maintaining support for continuing participants. In addition to their academic studies, Energy Scholars have access to a variety of support services. Additional information is available from the Energy Scholars Program; telephone (714) 824-4189.

### Engineering 199

Every undergraduate student in the School of Engineering has the opportunity to pursue independent research under the direct supervision of a professor in the School of Engineering. Interested students should consult with a faculty member to discuss the proposed research project. If the project is agreed upon, the student must fill out a 199 Proposal Form and submit it to the Engineering Undergraduate Student Affairs Office.

### Excellence in Engineering Research Program

The School of Engineering believes that successful participation in creative research is one of the highest academic goals its undergraduates can attain and accordingly recognizes such students as having achieved Excellence in Engineering Research. All Engineering majors doing research under Engineering E199 and Engineering E196 or Engineering EH199 and Engineering EH196 (for Campuswide Honors Program students) are eligible to apply to the program.

Students apply for this recognition by submitting a paper that represents a minimum of four units of effort (E199 and E196 or EH199 and EH196) to the Engineering Undergraduate Student Affairs Office. The candidate must be in good academic standing, have a grade point average of at least 3.0, and be making normal progress in Engineering. The successful candidates will present their work at a special symposium and have their paper published in the *School of Engineering Journal of Undergraduate Research*.

### Women and Minority Engineering Program (WMEP)

WMEP gives underrepresented students an opportunity to help each other and to enhance their technical knowledge, ensuring their success as students and as engineers. Undergraduate engineering majors and unaffiliated students, including women, Native Americans, African Americans, Mexican Americans, or Latin Americans, are eligible for services such as specialized advising, academic excellence workshops, undergraduate research opportunities, and assistance with scholarships. Additional information is available from the Women and Minority Engineering Program; telephone (714) 824-6749.

### NASA Undergraduate Student Researchers Program (NASA-USRP)

NASA-USRP (Underrepresented Minority and Disabled Focus) is designed to increase the presence of minority students and students with disabilities in the fields of science, mathematics, engineering, or computer science, compatible with NASA's mission. Students are selected by NASA as a result of national competition and based on the students' academic achievement, financial need, and proven interest in a NASA-related field.

Each award—\$12,000 per year per student—is issued as a grant to UCI in the name of the USRP student to cover educational, research, and academic support expenses. In addition, NASA provides students with a summer research opportunity at one of the eight NASA installations or the Jet Propulsion Laboratory. Additional information is available from NASA-USRP; telephone (714) 824-4189.

### 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. Additional information is available in the Education Abroad Program section.

### Minor in Global Sustainability

The interdisciplinary minor in Global Sustainability trains students to understand the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on this planet. See the Interdisciplinary Studies section of this *Catalogue* for more information.

## 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 seminars, tours of industries, and mentoring 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.

**Electric Vehicle Association/UCI (EVA/UCI).** EVA/UCI gives students an opportunity for hands-on work on electric car conversions coupled with design experience.

**Engineering Student Council (ESC).** The ESC is the umbrella organization that provides a voice for all Engineering student chapters. A significant activity of the Council is organizing UCI's annual Engineering Week celebration.

**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

All students in the School of Engineering must fulfill the following requirements.

**University Requirements:** See pages 57–61.

### School Requirements

The minimum subject-matter requirements for graduation are: 24 units of mathematics; 28 units of basic science; and 61 units of basic Engineering, departmental core, and technical electives, depending on the major.

**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. 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.

### Major Requirements

Specific information about courses fulfilling School and major requirements is included in the Departmental requirements section for each major. Note that some majors require more units than the School requirements.

## Undergraduate Major in Engineering

Engineering and Computing Trailer; (714) 824-4334

The School of Engineering offers a general undergraduate major in Engineering to upper-division students who wish to pursue broad multidisciplinary programs of study or who wish to focus on a special area not offered in the four departments. Examples of other areas that may be of interest are: biochemical engineering, electromechanical engineering, project management, or hydrology. The program of study in any area, aside from the established specializations, is determined in consultation with a faculty advisor.

Faculty in the Departments of Chemical and Biochemical Engineering, Civil and Environmental Engineering, Electrical and Computer Engineering, and Mechanical and Aerospace Engineering also teach courses in the major in Engineering program.

Descriptions and requirements for the undergraduate majors in Aerospace Engineering (AE), Chemical Engineering (ChE), Civil Engineering (CE), Computer Engineering (CpE), Electrical Engineering (EE), Engineering (a general program, GE), Environmental Engineering (EnE), and Mechanical Engineering (ME) may be found in each department's section.

## ADMISSIONS

The general major in Engineering is only open to junior-standing students who have completed the required lower-division courses with a high level of achievement. Freshmen are not eligible to apply for this major. The sequential nature of the Engineering program and the fact that many courses are offered only once a year make it beneficial for students to begin their studies in the fall quarter.

**Transfer students.** The general Engineering major is a specialized program for students who are seeking careers in areas other than traditional engineering disciplines and is open to upper-division students only. Preference will be given to applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of calculus, one year of engineering physics (with laboratory), one year of general chemistry (with laboratory), one course in computational methods (FORTRAN, Pascal, C, or C++), and one year of approved lower-division writing. Courses in linear algebra, differential equations, second-year engineering physics (with laboratory) are required for junior academic standing, and it is recommended that these courses be completed prior to transferring to UCI. Students should work closely with the UCI Office of Admissions and Relations with Schools, to ensure that they are enrolled in the appropriate courses.

For further information, contact the School of Engineering Undergraduate Student Affairs Office at (714) 824-4334.

## REQUIREMENTS FOR THE BACHELOR'S DEGREE IN ENGINEERING

Credit for at least 192 units including:

**University Requirements:** See pages 57–61.

**School Requirements:** See page 156.

**Departmental Requirements:**

*Mathematics Courses:* Mathematics 2A-B-C-D, 3A, and 3D (24 units).

*Basic Science Courses:* Chemistry 1A-B and 1LA-LB and Physics 5A-B-C-D-E and 5LB-LC-LD-LE (36 units).

*Basic Engineering Courses:* Engineering E10 or ECE11, E54, E80 or CE80, ME30 or CE30, ECE70A or ECE72 (18 units).

*Engineering Core Courses:* Engineering E101, ME150 or both CE150 and CE150L, CE170A or ME130A (12 units).

*Technical Electives:* The courses required in an area other than the formal specialization are determined in consultation with a faculty advisor (57 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 an academic counselor in Engineering. A sample program of study is available in the Undergraduate Student Affairs Office.

## Courses in Engineering

### LOWER-DIVISION

NOTE: With the exception of E54, the courses listed below are open only to students in the School of Engineering. All other majors must petition for permission to enroll.

**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, 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. Corequisite or 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)

**E54 Principles of Materials Science and Engineering (4) W.** Materials—topics range from superconductors to biodegradable polymers. Structure and properties of materials, including metal, ceramics, polymers, semiconductors, composites, traditional materials. Atomic structure, bonding, defects, phase equilibria, mechanical properties, electrical, optical, and magnetic properties. Brief introduction to materials processing and synthesis. Prerequisites: Physics 3A-B or 5A-B, Chemistry 1A. Engineering E54 and CE54 may not both be taken for credit. Formerly ME54. (Design units: 0)

**E69 Energy Facilities Inspection (0) F, W, S.** Inspection of power-generating stations of various types, oil and gas processing facilities, and end-use facilities. One unit of workload credit. Prerequisites: E2 and consent of instructor. May be repeated for credit as topics vary. (Design units: 0)

**E80 Dynamics (3) S.** Rigid body dynamics, momentum, and energy principles; modeling and analysis of mechanical systems. Prerequisites: Physics 5A and Mathematics 2D. Only one course from Engineering E80, CE80, and ME80 may be taken for credit. (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. Pass/Not Pass Only. Students may receive a maximum of 12 units of workload credit only. Same as Information and Computer Science 92. (Design units: 0)

**EH96 Freshman Honors Seminar (1).** Issues and conflicts from the philosophy and history of engineering and science, ethical responsibilities of engineers and scientists, the influence of diverse backgrounds, and the breadth of activities within the engineering and science disciplines. Various faculty participate each week. Open only to Engineering freshmen students accepted into the Campuswide Honors program. Same as Physical Sciences H96 and Information and Computer Science H96. Pass/Not Pass only.

**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. Only one course from Engineering E101, CE91, and ME91 may be taken for credit. (Design units: 0)

**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. (Design units: 0)

**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 confronted by engineers, scientists, and managers, e.g., conscience and free expression within corporations; professional obligations to the public; the role of values in safety decisions; ethics codes; whistle-

blowing. Examination of case studies. Prerequisite: completion of lower-division writing requirement. Same as Philosophy 131D. (Design units: 0)

**E196 Engineering Thesis (4) F, W, S.** Preparation of final presentation and paper describing individual research in Engineering completed in one or more quarters of individual study (i.e., E199). Prerequisites: completion of lower-division writing requirement, consent of E199 instructor, and completion of at least four units of Individual Research in Engineering. (Design units: varies)

**EH196 Honors Thesis (4) F, W, S.** Preparation of final presentation and paper describing individual research in Engineering. For participants in the Campuswide Honors Program. Prerequisites: EH199 and consent of instructor. (Design units: varies)

**E199 Individual Study (1 to 4) F, W, S.** Supervised independent reading, research, or design for undergraduate Engineering majors. Prerequisite: consent of instructor. May be repeated for credit. (Design units: varies)

**EH199 Honors Research (4) F, W, S.** Supervised research in Engineering for participants in the Campuswide Honors Program. Prerequisite: consent of instructor. May be repeated for credit. (Design units: varies)

## 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 counselor 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.

## Graduate Study in Environmental Engineering

114D Rockwell Engineering Center; (714) 824-7188

Terese M. Olson, **Director**

### Faculty

Constantinos V. Chrysikopoulos: Subsurface solute transport, nonaqueous phase liquid dissolution in porous media, mathematical modeling  
Donald Dabdub: Mathematical modeling of air pollution dynamics, parallel computing applied to environmental problems  
Nancy A. DaSilva: Bioremediation, genetic engineering  
Derek Dunn-Rankin: Combustion pollutants, incineration, aerosol inhalation and deposition  
Carl A. Friehe: Boundary-layer meteorology, atmospheric turbulence, air-sea energy exchange  
Stanley B. Grant: Environmental microbiology, biocolloid stability and transport, molecular biotechnology  
Gary L. Guymon: Water resources, mathematical modeling, geohydrology  
Juan Hong: Separation processes, bioremediation, bioreactor analysis  
Henry C. Lim: Bioreactor control optimization, genetic engineering, bioremediation  
Terese M. Olson: Environmental aquatic chemistry, colloid chemistry, chemical kinetics, water treatment  
Scott Samuels: Combustion, pollutant formation, energy efficiency and utilization, air quality, environmental ethics  
Jan Scherfig: Biological treatment, water reclamation and reuse, waste treatment  
Roland Schinzing: Electric energy systems  
William A. Sirignano: Combustion, pollutant formation, fire spread, noise suppression  
Thomas K. Wood: Bioremediation of chlorinated aliphatics and aromatics using both natural and genetically engineered microorganisms, biological reactors for site remediation

Environmental Engineering addresses the development of strategies to control anthropogenic emissions of pollutants to the atmosphere, waterways, and terrestrial environment; the remediation of polluted natural systems; the design of technologies to treat waste; fire safety; noise suppression; energy efficiency; and the evaluation of contaminant fate in urban environments. Environmental engineering issues are now an important component in the development of many engineering technologies and consequently are an important aspect of an engineering education. The discipline itself is interdisciplinary and requires a curriculum that provides students with an understanding of fundamentals in air- and water-quality sciences, contaminant fate and transport, and design concepts for pollutant emission control and treatment. To avoid the development of environmental engineering solutions which only transform one form of pollution to another, modern engineering education programs must require exposure and familiarity with a greater number of subjects than ever before.

Environmental engineers with an interdisciplinary background are particularly sought to address the complex infrastructure needs of today's society, where they must be able to communicate with teams of scientists and engineers from different disciplines. Environmental engineering graduates who meet this description can expect to remain in strong demand in the private and public employment sectors, and their range of career opportunities is highly diverse. Examples of career fields and activities include the development of new technologies to genetically engineer microorganisms for waste treatment, design of combustion and control processes that minimize pollutant emissions and maximize energy efficiency, resolution of complex pollutant transport processes in naturally heterogeneous systems, development of new physical-chemical treatment approaches, and characterization of pollutant transformation mechanisms in natural systems.

Curricular and research subjects of interest in Environmental Engineering include environmental air and water chemistry, environmental microbiology, combustion technologies, aerosol science, transport phenomena, reactor theory, unit operations and systems design, mathematical modeling, energy systems, soil physics, fluid

mechanics, hydrology, and meteorology. Interdisciplinary research endeavors commonly bridge many of these different subjects and a current focus is maintained on new and emerging technologies. Curriculum objectives have also been set to maintain a balance between the depth and breadth of program scope for each student.

Programs of study leading to the M.S. and Ph.D. degrees in Engineering are offered.

### Required Background

The interdisciplinary nature of the program allows students with a variety of backgrounds to undertake studies in this field. Students with a background in engineering—particularly chemical, civil, environmental, and mechanical engineering—as well as scientists from biology, chemistry, environmental science, and physics, are encouraged to participate.

Students admitted to the program are expected to have had rigorous undergraduate exposure to a number of relevant subject areas including air quality, environmental chemistry, fluid mechanics, microbial processes, and reactor theory and design. The degree to which each student meets the program's background requirement is determined by participating faculty at the time of admission. Students with an insufficient background who are offered admission will be required to take a set of appropriate prerequisite courses. Prerequisite work typically involves at least two and frequently as many as five or six upper-division, undergraduate courses each of which must be completed with a final grade of B or better. Occasionally, lower-division work in chemistry, mathematics, or physics is required. The student's specific prerequisite course work requirement, if any, is stated the letter of admission.

The background requirement establishes a common foundation for graduate study in the program. Not all students are required to take prerequisite course work; those who are may do so following matriculation in the graduate program. In addition, M.S. students may use a limited amount of upper-division course work taken to meet the background requirement in partial fulfillment of graduate degree requirements.

Although this list is not exhaustive, commonly required prerequisite courses within each of the required background areas are as follows:

*Air Quality:* Engineering ME110, ME162, or ME164

*Environmental Chemistry:* Engineering CE164 and 164L

*Environmental Microbiology:* Engineering CE166 or ChE165

*Fluid Mechanics:* Engineering CE170A, ChE120A, or ME130A

*Reactor Theory and Design:* Engineering ChE160

### Core Requirement

Students must complete an advanced mathematics course, either Engineering BE220 (Applied Chemical Engineering Mathematics), CE283 (Mathematical Methods in Engineering Analysis), or ME200B (Engineering Analysis II).

### Areas of Emphasis

Each student selects a primary area of emphasis within Environmental Engineering: Water Quality, Water Resources, or Air Quality and Combustion. To achieve the interdisciplinary objectives of the program, students are required to take at least two electives outside their primary area, one each in two different areas. These outside electives may also be taken from approved courses in other academic units, including the Schools of Social Ecology and Physical Science, and the College of Medicine. Electives within each of the emphasis areas in Engineering are listed below.

*Water Quality:* Engineering BE230 (Transport Phenomena), BE240 (Bioengineering with Recombinant Organisms), BE260 (Reaction Engineering), BE262 (Bioreactor Engineering), BE270 (Bioremediation), CE261 (Environmental Microbiology), CE262A, B (Colloid Transport Phenomena I, II), CE263 (Water and Waste Treatment

Technology), CE264 (Chemical Equilibria in Natural Waters), CE265 (Chemical Dynamics in Natural Waters), CE266 (Aqueous Geochemistry), CE269 (Hazardous Waste Remediation).

*Water Resources:* Engineering CE271 (Unsaturated Flow in Soils), CE272 (Groundwater Hydrology), CE274 (Transport Phenomena in Porous Media), CE275 (Numerical Methods in Subsurface Hydrology), CE276 (Stochastic Geohydrology), CE278 (Flow in Open Channels), CE279 (Surface Water Hydrology).

*Air Quality and Combustion:* Engineering ME210 (Advanced Fundamentals of Combustion), ME215 (Advanced Combustion Technology), ME233A, B (Numerical Methods in Heat, Mass, and Momentum Transport), ME230A (Advanced Incompressible Fluid Dynamics I), ME231 (Fundamentals of Turbulence), ME232 (Atmospheric Turbulence), ME260 (Issues Related to Atmospheric Processes), ME261 (Air Pollution Modeling), ME264 (Combustion Particulates and Aerosols), ME280 (Digital Data Acquisition and Analysis).

## MASTER OF SCIENCE DEGREE

Two options are available for M.S. degree students: a thesis option and a comprehensive examination option. Both options require the completion of 36 units of study. Study plans for both options must also include two graduate courses from outside the student's primary area of emphasis.

### Plan I. Thesis Option

A thesis option is available to students who prefer to conduct a focused research project. Students selecting this option must complete an original research investigation and a thesis, and obtain approval of the thesis by a thesis committee. Of the 36 required units, at least 20 must be graduate courses (numbered 200-289), including either Engineering BE220, ME200B, or CE283. A maximum of eight M.S. research units and up to eight units of upper-division undergraduate elective courses may be applied to the degree with the approval of a faculty advisor.

### Plan II. Comprehensive Examination Option

Alternatively, students may select a comprehensive examination option in which they must successfully complete 36 units of study and pass a comprehensive examination. At least 24 units must be graduate courses (numbered 200-289), including either Engineering BE220, ME200B, or CE283. Up to 12 units may be taken as upper-division undergraduate elective courses.

## DOCTOR OF PHILOSOPHY DEGREE

The Ph.D. concentration in Environmental Engineering requires the achievement of original and significant research that advances the discipline. Doctoral students are selected on the basis of an outstanding record of scholarship and potential for research excellence.

The doctoral study program is tailored to the individual student in consultation with a faculty advisory committee. There are no specific course requirements, however, additional mathematics courses beyond those required for a M.S. degree are generally required, reflecting the student's specific research interests. Milestones to be passed include: admission to the Ph.D. program by the faculty, passage within the first year of a preliminary examination or similar assessment of the student's background and potential for success, research preparation, formal advancement to candidacy by passing a qualifying examination, completion of a significant research investigation, and the submission and oral defense of an acceptable dissertation.

Committees for preliminary and Ph.D. qualifying examinations and the doctoral committee must have at least one Environmental Engineering faculty member from outside the student's area of emphasis. The student's dissertation topic must be approved by the student's

doctoral committee. The degree is granted upon the recommendation of the doctoral committee and the Dean of Graduate Studies. Doctoral programs must be completed within seven calendar years of the date of admission.

## Graduate Study in Materials Science and Engineering

114D Rockwell Engineering Center; (714) 824-5807  
Farghalli A. Mohamed, **Director**

### Faculty

James C. Earthman: Fatigue behavior and cyclic damage, automated materials testing, defect monitoring techniques, image analysis  
Hideya Gamo: Quantum electronics, electromagnetics  
Enrique J. Lavernia: Solidification processing of metals, intermetallics and refractory materials  
Chin C. Lee: Electronic packaging, thermal management, integrated optics  
Henry P. Lee: Optoelectronic materials, growth, and devices  
Guann Pyng Li: Optoelectronic devices, integrated circuit fabrication and testing, high-speed semiconductor technology  
Martha L. McCartney: Microstructure of materials, interfacial engineering, sol-gel processing, ferroelectric thin films, electron microscopy  
Farghalli A. Mohamed: Mechanical properties, creep, superplasticity  
Frank G. Shi: Phase transformations, metastable materials  
Gregory J. Sonek: Devices, electrooptics and fiber optics, biomedical applications  
Chen S. Tsai: Integrated optic devices, circuits, materials; acoustic microscopy with applications to materials, device characterization  
Jeffrey B. Wolfenstine: Mechanical behavior, kinetic properties, processing of ceramics materials

Materials Science and Engineering is concerned with the generation and application of knowledge relating the composition, structure, and processing of materials to their properties and applications. During the past two decades, the field has become an important component of modern engineering education, partly because of the increased level of sophistication required of engineering materials in a rapidly changing technological society, and partly because the selection of materials has increasingly become an integral part of almost every modern engineering design. In fact, further improvements in design are now viewed more and more as primarily a materials issue. Both the development of new materials and the understanding of present-day materials demand a thorough knowledge of basic engineering and scientific principles including, for example, crystal structure, mechanics, mechanical behavior, electronic, optical and magnetic behavior, thermodynamics, phase equilibria, heat transfer, diffusion, and the physics and chemistry of solids.

The field of Materials Science and Engineering ranks high on the list of top careers for scientists and engineers. The services of these engineers and scientists are required in a variety of engineering operations dealing, for example, with design of semiconductors and optoelectronic devices, development of new technologies based on composites and high-temperature superconductivity, biomedical products, performance (quality, reliability, safety, energy efficiency) in automobile and aircraft components, improvement in nondestructive testing techniques, corrosion behavior in refineries, radiation damage in nuclear power plants, and fabrication of steels.

Subjects of interest in the field cover a wide spectrum, ranging from metals and optical and electronic materials to superconductive materials, ceramics, advanced composites, and biomaterials. In addition, the emerging new research and technological areas in materials are in many cases interdisciplinary. Accordingly, the principal objective of the graduate curriculum is to integrate a student's area of emphasis—whether it be structural materials, chemical processing, mechanics of solids, or electronic devices—into the whole of material science and engineering. Such integration will breed familiarity with other disciplines and provide the students

with the breadth they need to face the challenges of current and future technology.

Programs of study leading to the M.S. and Ph.D. degrees in Engineering are offered.

### Recommended Background

Given the nature of Materials Science and Engineering as a cross-disciplinary program, students having a background and suitable training in either Materials, Engineering (Mechanical, Electrical, Civil, Chemical), or the Physical Sciences (Physics, Chemistry, Geology) are encouraged to participate. Recommended background courses include an introduction to materials, thermodynamics, mechanical behavior, and electrical/optical/magnetic behavior. A student with an insufficient background may be required to take remedial undergraduate courses.

### Core Requirement

Because of the interdepartmental nature of the concentration, it is important to establish a common foundation in Materials Science and Engineering for students from various backgrounds. This foundation is limited to comprehensive materials science topics and is covered in the three core courses: MSE200, MSE205, and MSE210.

### Areas of Emphasis

Each student selects an area of emphasis within Materials Science and Engineering: Electronic and Photonic Materials, Structural Materials, Mechanics of Solids, or Chemical Processing of Materials. Students select specific course requirements within the areas of emphasis in consultation with the program director and their faculty advisor. Typical examples follow.

*Chemical Processing:* Engineering BE210 (Chemical Engineering Thermodynamics), BE230 (Transport Phenomena), BE260 (Reaction Engineering), BE280 (Fundamentals of Phase Transformations).

*Electronic and Photonic Materials:* Engineering ECE217A (Advanced Semiconductor Devices I), ECE217B (Advanced Semiconductor Devices II), ECE275A (Electrooptical Devices).

*Mechanics of Solids:* Engineering CE242 (Continuum Mechanics), CE243 (Mechanics of Composite Material), CE281 (Finite Element Method in Continuum Mechanics).

*Structural Materials:* Engineering ME200A or 200B (Engineering Analysis), ME251A (Dislocation Theory), ME252A (Diffusion Theory), ME253 (Kinetic Phenomena in Materials), ME254A (Mechanical Behavior of Engineering Materials), ME255 (Ceramic Materials), ME256A (Fracture of Engineering Materials), ME259A (Electron Microscopy).

### MASTER OF SCIENCE DEGREE

A minimum of 36 approved units is required for the M.S. degree. Two options are available, a thesis option and a courses only option. The thesis option requires a research study of greater depth and originality than the courses option. For the thesis option, students are required to develop and obtain approval for a complete program of study. A committee of three full-time faculty members is appointed to guide development of the thesis. At least 21 units must be from courses numbered 200-289, among which nine units are from MSE core courses and 12 units are in an area of emphasis approved by the faculty advisor and the graduate advisor. Up to eight units of Engineering ME296 or ECE296 and up to eight units of undergraduate elective courses can be applied toward the 36-unit requirement. For the courses only option, at least 24 units must be from courses numbered 200-289, among which nine units are from MSE core courses and 15 units are in an area of emphasis approved by the faculty advisor and the graduate advisor. Up to

eight units of undergraduate elective courses can be applied toward the 36-unit requirement.

### DOCTOR OF PHILOSOPHY DEGREE

The Ph.D. concentration in Materials Science and Engineering requires a commitment on the part of the student to dedicated study and collaboration with the faculty. Ph.D. students are selected on the basis of outstanding demonstrated potential and scholarship. Applicants must hold the appropriate prerequisite degrees from recognized institutions of high standing. After substantial preparation, Ph.D. candidates work under the supervision of faculty advisors. The process involves extended immersion in a research atmosphere and culminates in the production of original research results presented in a dissertation.

Milestones to be passed in the Ph.D. program include the following: acceptance into a research group by the faculty advisor during the student's first year of study; successful completion of the Ph.D. preliminary examination; preparation for doing research, completion of the School of Engineering teaching requirements, and the development of a research proposal; passing the qualifying examination which assesses the candidate's preparation for research and evaluates the proposed research; successful completion of the research; development and approval of the dissertation; presentation of the dissertation and a final examination on its contents. There is no foreign language requirement.

The preliminary examination, to be taken in the fall of the second year of the Ph.D. program, is based on the MSE core courses and courses taken in the area of emphasis. The examination committee is appointed by the program director with subsequent approval by the Chair of the appropriate department of the area of emphasis. The degree is granted upon the recommendation of the doctoral committee and the Dean of Graduate Studies. The program must be completed within seven calendar years of the date of admission.

### COURSES IN MATERIALS SCIENCE AND ENGINEERING

**MSE200 Advanced Concepts in Materials (3) F.** Principles and concepts underlying the study of advanced materials including alloys, composites, ceramics, semiconductors, polymers, ferroelectrics, and magnetics. Crystal structure and defects, surface and interface properties, thermodynamics and kinetics of phase transformations, and material processing, related to fundamental material properties. Prerequisites: Chemistry 1A-B-C, Physics 5A-B-C.

**MSE205 Physical and Electronic Properties of Engineering Materials (3) W.** Covers the electronic, optical, and dielectric properties of crystalline materials to provide a foundation of the underlying physical principles governing the properties of existing and emerging electronic and photonic materials. Prerequisite: introductory course in electromagnetics and modern physics.

**MSE210 Materials Characterization Techniques and Analysis (3) S.** Introduction to microcharacterization techniques, and their application to the study of bulk and thin-film materials; methods of analysis, including electron beam-induced excitations (SEM, SAM, EDX, STEM), x-ray and photon-induced interactions (PEX, ESCA), ion processes (RSB, SIMS, PIXE), sub-micron optical techniques, and electromagnetic field-induced methods (STM, AFS). Prerequisites: Chemistry 1A-B-C, Physics 5A-B-C.

### Graduate Study in Protein Engineering

145 Biological Sciences Administration; (714) 824-6686

#### Participating School of Engineering Faculty

Nancy A. DaSilva: Improvement of cell and enzyme-mediated processes via molecular genetics

Thomas K. Wood: Expression of oxygenases in foreign hosts for bioremediation

The School of Engineering, in conjunction with the School of Biological Sciences and the Department of Chemistry in the School of Physical Sciences, participates in the joint graduate program in Protein Engineering. This interdisciplinary graduate program offers students the opportunity to work with the approximately 20 faculty in any of the participating academic units; take course work in the areas of protein structure, function, and molecular biology; and earn the Ph.D. in Engineering, Biological Sciences, or Chemistry with a concentration in Protein Engineering Science. Additional information is available in the School of Biological Sciences section of the *Catalogue* and through the Graduate Program in Protein Engineering office in the Biological Sciences Administration Building.

### DEPARTMENT OF CHEMICAL AND BIOCHEMICAL ENGINEERING

916F Engineering Tower; (714) 824-3426

Henry C. Lim, **Department Chair**

#### Faculty

Nancy A. DaSilva: Recombinant cell technology

James C. Earthman: Fatigue behavior and cyclic damage, high-temperature fracture, automated material testing

Steven C. George: Physiological systems modeling, respiratory heat and mass transport, kinetics, computer simulation, tissue engineering

G. Wesley Hatfield: Molecular mechanisms of biological control systems

Juan Hong: Biochemical and separation processes

Enrique J. Lavermia: Solidification processing of metals, powder metallurgy, intermetallics, and refractory materials

Henry C. Lim: Bioreaction and bioreactor engineering

Martha L. McCartney: Sol-gel processing, oxide thin films for microelectronic applications

Farghalli A. Mohamed: Mechanical properties, creep, superplasticity, correlations between property and microstructure

Betty H. Olson: Environmental biotechnology

Roger H. Rangel: Fluid mechanics, heat transfer of multiphase systems including spray combustion, atomization, and metal spray solidification; applied mathematics

Frank G. Shi: Chemical and materials engineering

William A. Sirignano: Combustion theory and computational methods, multiphase flows, turbulent reacting flows

Jeffrey B. Wolfenstine: Mechanical behavior, kinetic properties, processing of ceramic materials

Thomas K. Wood: Bioremediation, metabolic engineering, environmental engineering

The Department of Chemical and Biochemical Engineering offers a program of study leading to the B.S. degree in Chemical Engineering and to the M.S. and Ph.D. degrees in Chemical and Biochemical Engineering.

### Undergraduate Major in Chemical Engineering

Chemical Engineering uses knowledge of chemistry, mathematics, physics, biology, and humanities to solve societal problems in areas such as energy, health, the environment, food, clothing, shelter, and materials and serves a variety of processing industries whose vast array of products include chemicals, petroleum products, plastics, pharmaceuticals, foods, textiles, fuels, consumer products, and electronic and cryogenic materials. Chemical engineers also serve

society in improving the environment by reducing and eliminating pollution.

The undergraduate curriculum in Chemical Engineering builds on basic courses in chemical engineering, other branches of engineering, and electives which provide a strong background in humanities and human behavior. Elective programs developed by the student with a faculty advisor may include such areas as applied chemistry, biochemical engineering, chemical reaction engineering, chemical processing, environmental engineering, materials science, process control, and systems engineering.

## ADMISSIONS

**High School Students:** See page 154.

**Transfer Students.** Preference will be given to applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of calculus, one year of engineering physics (with laboratory), one year of general chemistry (with laboratory), one course in computational methods (FORTRAN), and one year of approved lower-division writing. Courses in linear algebra, differential equations, organic chemistry, thermodynamics, and chemical engineering calculations are required for junior academic standing, and it is recommended that these courses be completed prior to transfer. Students should work closely with the UCI Office of Admissions and Relations with Schools to ensure that they are enrolled in appropriate courses.

For further information, contact the School of Engineering Undergraduate Student Affairs Office at (714) 824-4334.

## REQUIREMENTS FOR THE BACHELOR'S DEGREE IN CHEMICAL ENGINEERING

Credit for at least 195 units including:

**University Requirements:** See pages 57-61.

**School Requirements:** See page 156.

### Departmental Requirements:

**Mathematics Courses:** Mathematics 2A-B-C-D, 3A, and 3D (24 units).

**Basic Science Courses:** Chemistry 1A-B-C, 1LA-LB; 51A-B-C, 51LA-LB or 52A-B-C, 52LA-LB; 130A-B-C or 131A-B-C; and Physics 5A-B-C and 5LB-LC (at least 56 units).

**Basic Engineering Courses:** Engineering E10 and E54 (8 units).

**Chemical Engineering Core Courses:** Engineering ChE40, ChE60, ChE96, ChE120A-B, ChE120LA-LB, ChE122, ChE160, ChE162, ChE163 (44 units).

**Technical Electives:** 18 units (which must include 9 units of Engineering topics); all technical electives must be approved by the faculty advisor.

## PLANNING A PROGRAM OF STUDY

The sample program of study chart shown is typical for the major in Chemical Engineering. Students should keep in mind that this program is based upon a sequence of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their program approved by their faculty advisor. Chemical Engineering majors must consult at least once every year with the academic counselors in the Undergraduate Student Affairs Office and with their faculty advisors.

## Sample Program of Study — Chemical Engineering

FALL	WINTER	SPRING
<b>Freshman</b>		
Mathematics 2A	Mathematics 2B	Mathematics 2C
Chemistry 1A, 1LA	Chemistry 1B, 1LB	Chemistry 1C
E10	Physics 5A	Physics 5B, 5LB
ChE96	Breadth	Breadth
Breadth		
<b>Sophomore</b>		
Mathematics 2D	Mathematics 3A	Mathematics 3D
Chemistry 51A, 51LA	Chemistry 51B, 51LB	Chemistry 51C
or 52A, 52LA	or 52B, 52LB	or 52C
ChE40	ChE60	Breadth
		Breadth
<b>Junior</b>		
Chemistry 130A	Chemistry 130B	Chemistry 130C or
or 131A	or 131B	or 131C
Physics 5C, 5LC	E54	ChE120A
ChE160	Technical Elective	Technical Elective
Breadth	Breadth	Breadth
<b>Senior</b>		
ChE120B	ChE120LA	ChE120LB
Technical Elective	ChE122	ChE162
Technical Elective	ChE163	Technical Elective
Breadth	Breadth	Breadth

## Graduate Study in Chemical and Biochemical Engineering

Chemical engineering uses the knowledge of chemistry, mathematics, physics, biology, and social sciences to solve societal problems such as energy, health, environment, food, clothing, shelter, and materials. It serves a variety of processing industries whose vast array of products include chemicals, petroleum products, plastics, pharmaceuticals, foods, textiles, fuels, consumer products, and electronic and cryogenic materials. It also serves society to improve the environment by reducing and eliminating pollution. Chemical engineering is an engineering discipline that has its strongest ties with the molecular sciences. This is an important asset since sciences such as chemistry, molecular biology, biomedicine, and solid-state physics are providing the seeds for future technologies. Chemical engineering has a bright future as the discipline which will bridge science with engineering in multidisciplinary environments.

Biochemical Engineering is concerned with the processing of biological materials and processes that use biological agents such as living cells, enzymes, or antibodies. Biochemical Engineering, with integrated knowledge of the principles of biology and chemical engineering, plays a major engineering role in the rapidly developing area of biotechnology. Career opportunities in Biochemical Engineering are available in a variety of industries such as biotechnology, chemical, environmental, food, petrochemical, and pharmaceutical industries.

The principle objectives of the graduate curriculum in Chemical and Biochemical Engineering are to develop and expand students' abilities to solve new and more challenging engineering problems and to promote their skills in independent thinking and learning in preparation for careers in manufacturing, research, or teaching. These objectives are reached through a program of course work and research designed by each student with the assistance, advice, and approval of a primary faculty advisor and a faculty advisory committee. Programs of study leading to the M.S. and Ph.D. degrees in Chemical and Biochemical Engineering are offered.

Graduate study and research in materials includes investigations of materials processing, composite materials, creep, fracture and fatigue, ceramics, and superplasticity.



Several faculty in the Department are also members of the graduate program in Protein Engineering, which is described in the School of Biological Sciences section of the *Catalogue*.

## MASTER OF SCIENCE DEGREE

Two plans are available for the M.S. degree: a thesis option and a course work option. Opportunities are available for part-time study toward the M.S. degree.

Students who enter the program with a B.S. degree in chemical engineering must take at least six graduate-level courses (22 units), while students who enter without undergraduate preparation in chemical engineering are required to take three to five additional prerequisite courses (Mathematics 105A-B-C and Engineering ChE60, ChE120A, ChE160, and ChE165.) 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 38 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: Course Work Option

The course work option requires the completion of 39–40 units of study, of which 31–32 must be nonresearch, graduate-level courses.

## 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 Chemical and 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.

#### CHEMICAL ENGINEERING

**ChE40 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, Physics 5A, and Engineering E10. (Design units: 1)

**ChE60 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 dynamic process and efficiencies. Solution thermodynamics and applications to oxidation reactions. Equilibrium phase diagrams and liquid to solid phase transformations. Prerequisites: Engineering ChE40, Engineering E10, Mathematics 2C, or equivalent. Formerly Engineering ChE110, E110. (Design units: 1)

**ChE96 Freshman Seminar (1) F.** Overview on application of chemical engineering principles in chemical processes, biochemical processes, materials processing. (Design units: 0)

**ChE120A Momentum Transfer (4) W or S.** Macroscopic and differential mass balances; macroscopic and differential linear and angular momentum balances, mechanical energy balances; Ideal fluids, Newtonian and non-Newtonian fluids and turbulence. Applications to chemical processes. Prerequisites: Engineering ChE40 and Mathematics 3D. Formerly Engineering E120A. (Design units: 1)

**ChE120LA Chemical Engineering Laboratory I (4) F or W.** Experimental study of thermodynamics, fluid mechanics, and heat and mass transfer. Operation and evaluation of process equipment, data analysis. Prerequisites: ChE60, ChE120B, and ChE160. Formerly Engineering E120LA. (Design units: 1)

**ChE120B Heat and Mass Transfer (4) S or 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: ChE120A. Formerly Engineering E120B. (Design units: 1)

**ChE120LB Chemical Engineering Laboratory II (4) W or S.** Continuation of ChE120LA covering mass transfer operations such as distillation, absorption, extraction, and the like. Rate and equilibria studies in simple chemical systems with and without reaction. Study of chemical process. Prerequisites: ChE120LA, ChE122, and ChE163. (Design units: 3)

**ChE122 Separation Processes (4) F or W.** Application of equilibria and mass and energy balances for design of separation processes. Use of equilibrium laws for design of distillation, absorption, stripping, and extraction equipment. Design of multicomponent separators. Prerequisite: ChE120B or equivalent. Formerly Engineering E122. (Design units: 3)

**ChE160 Reaction Kinetics and Reactor Design (4) F.** Introduction to quantitative analysis of chemical reactions and chemical reactor design. Reactor operations including batch, continuous stirred tank, and tubular reactor. Homogeneous and heterogeneous reactions. Prerequisites: Mathematics 3D, Chemistry 1C, and Engineering ChE60. Formerly Engineering BE160. (Design units: 2)

**ChE162 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, process safety. Prerequisites: ChE120B, ChE122, and ChE160. Formerly Engineering E162. (Design units: 5)

**ChE163 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: ChE120B and ChE160. Formerly Engineering E163. (Design units: 1)

**ChE165 Introduction to Biochemical Engineering (3) F, W, or S.** Application of engineering principles to biochemical processes. Topics include: microbial pathways, energetics and control systems, enzyme and microbial kinetics, and the design and analysis of biological reactors. Prerequisites: Chemistry 1C, Mathematics 3D, and Engineering ChE160 or consent of the instructor. Formerly Engineering BE150. (Design units: 1)

**ChE170 Pollution Control (3) F, W, or S.** Application of basic pollution control principles to the chemical industry. Selection of environmentally compatible materials, prioritization of pollutants, analysis of material life cycles, design of unit operations to minimize waste, and economics of pollution control. Prerequisite: ChE40 or consent of instructor. Formerly Engineering E170. (Design units: 1)

**ChE175 Introduction to Catalysis (3) F, W, or S.** Solution catalysis, enzyme catalysis, catalysis by polymers and zeolites, and catalysis on inorganic surfaces. Prerequisites: Chemistry 51A or 52A; Engineering ChE60 or Chemistry 130A or 131A. (Design units: 0)

**ChE185 Modeling Physiological Systems (4) F, W, or S.** Experimental and theoretical model building and testing; emphasis on physiological systems including transport phenomena in the respiratory system and pressure-flow relationships in the cardiovascular system; statistical methods for parameter specification; analytical and numerical solution techniques. Prerequisites: Engineering E10, Engineering ChE40, ChE120A, and ChE120B, or equivalent. (Design units: 0)

**ChE199 Individual Study (1 to 4) F, W, S, Summer.** For undergraduate Engineering majors in supervised but independent readings, research, or design. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

## MATERIALS SCIENCE

**CBE149 Ceramic Materials (4) W.** A technical elective for students interested in the materials area. Topics covered include structure and properties of ceramics and design with ceramics. The laboratory component offers hands-on experience. Prerequisites: Engineering E54 and ME105. Formerly Engineering ME149. (Design units: 1)

**CBE153 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: Engineering ME151A, ME156. Formerly Engineering ME153. (Design units: 2)

**CBE154 Advanced Materials: Polymeric Materials (3) S.** Covers the processing and design of polymeric materials, beginning with the synthesis of polymers. Mechanical behavior of polymers and polymeric composites emphasized. Design aspect using polymeric materials composites significant portion, utilizing case studies and student projects. Field trips to local polymeric industries required. Prerequisite: consent of instructor. Formerly Engineering ME154. (Design units: 1)

**CBE155A 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: Engineering E54, ME150. Formerly Engineering ME155A. (Design units: 3)

**CBE155B Advanced Composites Design (4) S.** Stress analysis and design limit of laminated composite structures. Thermal stresses, fatigue behavior, elastic instability. Manufacturing considerations and design of fittings and joints. Design cases include pressure vessels, shafts, struts, as well as components of an all-composite airplane. Prerequisite: CBE 155A. Formerly Engineering ME155B. (Design units: 2).

## GRADUATE

### CHEMICAL AND BIOCHEMICAL ENGINEERING

**BE209 Literature in Protein Engineering (1) F, W, S.** Students review current papers in the field of protein engineering and present the ideas contained therein to other students and faculty. May be repeated for credit. Same as Molecular Biology 209 and Physiology 209.

**BE210 Chemical Engineering Thermodynamics (4) F 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: ChE60 or consent of instructor.

**BE220 Applied Chemical Engineering Mathematics (4) F.** Mathematical and numerical techniques applied chemical engineering problems in transport phenomena, chemical process dynamics and control, chemical reactor design and stability, thermodynamics, and staged operations. Prerequisites: Engineering ChE120A, ChE120B, and ChE160 or consent of instructor.

**BE222 Bioseparation Processes (3) F, W, or 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: ChE165 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. Prerequisite: Engineering ChE120A, ChE120B, or consent of instructor.

**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: ChE160, ChE165, or consent of instructor.

**BE242 Protein Engineering (3) F, W, or S.** The design of novel proteins and their production by genetic manipulation. Principles of protein structure and function and techniques of molecular biology relevant to protein engineering. Applications of protein technology. Prerequisite: ChE165 or course work in biochemistry. Same as Physiology 242.

**BE250 Advanced Biochemical Engineering (3) F.** Engineering studies of biological processes including enzyme reactions and fermentation processes with genetically engineered microorganisms and animal and plant cells. Development of production and recovery processes for biochemicals. Prerequisites: ChE160, ChE165, or consent of instructor.

**BE260 Reaction Engineering (4) W.** Advanced topics in reaction engineering, reactor stability analysis, diffusional effect in heterogeneous catalysis, energy balance, optimization of reactor operation, dispersed phase reactors. Prerequisite: ChE160.

**BE262 Bioreactor Engineering (3) F, W, or S.** Modeling, optimization, and control of biological reactors. Statics and dynamics of bioreactors containing recombinant cells and multiple species. Prerequisite: consent of instructor.

**BE270 Bioremediation (3) F, W, or S.** Application of engineering and biological principles toward remediation of hazardous wastes. Degradation of toxic chemicals using genetically engineered microorganisms emphasized. Biological contacting devices for waste remediation also studied. Prerequisites: ChE160 and ChE165 or consent of instructor.

**BE280 Fundamentals of Phase Transformations (3) F, W, or S.** Principles of phase transformations applicable to many different materials and states of materials are emphasized. Applications in devices processing and materials development are discussed. Prerequisite: 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 Chemical and Biochemical 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 Chemical and Biochemical 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 Chemical and 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.

## MATERIALS SCIENCE

**CBE251 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: Engineering E54 or consent of instructor. Formerly Engineering ME251.

**CBE252A 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: Engineering E54 or consent of instructor. Formerly Engineering ME252A.

**CBE252B Phase Transformations (3) W.** Kinetics of nucleation, nucleation theory, isothermal transformation, martensitic transformation. Prerequisite: CBE252A. Formerly Engineering ME252B.

**CBE253 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. Formerly Engineering ME253.

**CBE254A 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: Engineering E54. Formerly Engineering ME254A.

**CBE254B 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 E54, ME30, or consent of instructor. Formerly Engineering ME254B.

**CBE255A 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: Engineering E54. Formerly Engineering ME255A.

**CBE255B 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: Engineering E54 and ME150, or consent of instructor. Formerly Engineering ME255B.

**CBE256A 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: Engineering ME156 or CBE254A or consent of instructor. Formerly Engineering ME256A.

**CBE256B 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: CBE256A or Engineering ME156 or equivalent. Formerly Engineering ME256B.

**CBE257A 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. Formerly Engineering ME257A.

**CBE257B 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. Formerly Engineering ME257B.

**CBE257C 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. Formerly Engineering ME257C.

**CBE258 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: Engineering E54 or consent of instructor. Formerly Engineering ME258.

**CBE259A 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). Formerly Engineering ME259A.

**CBE259B 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: Engineering CBE259A. Formerly Engineering ME259B.

**CBE260 Structure and Characterization of Materials (3) F.** Structure of materials, atomic bonding, crystallography, crystal defects. Basic physical principles and applications of analytical techniques for characterizing materials, including x-ray diffraction, electron diffraction, scanning and transmission electron microscopy, scanning tunneling and atomic force microscopy, x-ray photoluminescence spectroscopy. Formerly Engineering ME260.

**CBE261 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: Engineering E54 and ME156 or consent of instructor. Formerly Engineering ME261.

## DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

E4150 Engineering Gateway; (714) 824-5333

Stephen G. Ritchie, **Department Chair**

### Faculty

Alfredo H.-S. Ang: Structural and earthquake engineering, risk and reliability analysis

Constantinos V. Chrysikopoulos: Transport in porous media, environmental systems, mathematical modeling

Maria Q. Feng: Structural engineering and intelligent control of structural systems

Stanley B. Grant: Environmental microbiology, biocolloid stability and transport, molecular biotechnology

Gary L. Guymon: Water resources, groundwater, modeling uncertainty

Medhat A. Haroun: Structural and earthquake engineering

R. (Jay) Jayakrishnan: Transportation systems analysis

Michael G. McNally: Travel behavior, transportation systems analysis

Terese M. Olson: Environmental engineering, aquatic 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 reclamation, waste treatment processes, toxic waste

Robin Shepherd: Structural dynamics, earthquake-resistant design

Roberto Villaverde: Structural dynamics and earthquake engineering

Jann-Nan Yang: Fatigue, reliability, maintainability, and structural control

### Lecturers

L. James Ewing, Jr.: Water and wastewater systems, reclamation and reuse

James Howard: Hazard waste management

Rodney Pimentel: Computer-aided geometric design

Richard O. Richter: Hazardous waste remediation

Glenn R. Roquemore: Geology

W. H. Scholz: Construction and project management

John Tracy: Lightweight structures

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 systems engineering; 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.

Environmental Engineering involves designing environmental protection or remediation strategies for multiple resources—water, air, and soil, often with combinations of physical, chemical, and biological treatment methods in the context of a complex regulatory framework.

The goal of the Environmental Engineering curriculum is to prepare graduates with a strong basic science background, particularly in chemistry and biology, and to provide students with a broad exposure to several environmental engineering science disciplines. Courses relating to transport processes, water quality control, air quality control, and process design are included in the core.

Career opportunities in environmental engineering are diverse. Graduates generally find careers related to pollution control and the remediation of air, water, and soil environments.

## Undergraduate Major in Civil Engineering

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 154.

**Transfer Students.** Preference will be given to applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of calculus, one year of engineering physics (with laboratory), two quarters of general chemistry (with laboratory), one course in computational methods (FORTRAN, Pascal, or C), and one year of approved lower-division writing. Courses in linear algebra, differential equations, dynamics, thermodynamics, statics, and materials science are required for junior academic standing, and it is recommended that these courses be completed prior to transfer. Dynamics, materials science, statics, and thermodynamics may be offered during the summer session at UCI. Students should work closely with the UCI Office of Admissions and Relations with Schools to ensure that they are enrolled in the appropriate courses.

For further information, contact the School of Engineering Undergraduate Student Affairs Office at (714) 824-4334.

## REQUIREMENTS FOR THE BACHELOR'S DEGREE IN CIVIL ENGINEERING

Credit for at least 192 units including:

**University Requirements:** See pages 57–61.

**School Requirements:** See page 156.

### Departmental Requirements:

**Mathematics Courses:** Mathematics 2A-B-C-D, 3A, and 3D (24 units).

**Basic Science Courses:** Chemistry 1A-B and 1LA-LB, Physics 5A-B-C and 5LB-LC, and one course selected from Chemistry 1C, Physics 5D, 5E, or Biological Sciences 94 (at least 28 to 30 units).

**Basic Engineering Courses:** Engineering E10, E54, CE1, CE2, CE5, CE30, CE50, CE80, and CE91 (31 units).

**Civil Engineering Core Courses:** Engineering CE105, CE112, CE125, CE131, CE131L, CE150, CE150L, CE151A, CE154, CE170A, and CE170B (39 units).

**Technical Electives:** 16 units in one of the four specializations and 8 units of unrestricted technical electives for a total of 24 units. The student's faculty advisor must approve the course selection.

**Specialization in Environmental Engineering:** Requires 16 units from the following list; must include the capstone design course CE175: Engineering CE130, CE164, CE164L, CE165, CE166, CE173, and CE175.

**Specialization in Structural Engineering:** Requires 16 units from the following list; must include the capstone design course CE156: Engineering CE132, CE151B, CE152, CE155, and CE156.

**Specialization in Transportation Engineering:** Requires 16 units from the following list; must include the capstone design course CE128: Engineering CE126, CE127, CE128, and CE129.

**Specialization in Water Resources Engineering:** Requires 16 units from the following list; must include the capstone design course CE175: Engineering CE130, CE171, CE172, CE173, and CE175.

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.

### 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 who select the Environmental Engineering specialization within the Civil Engineering major should follow the Civil Engineering sample program.) Students must have their programs approved by their faculty advisor. Civil Engineering majors must consult at least once every year with the academic counselors in the Undergraduate Student Affairs Office and with their faculty advisors.

#### Sample Program of Study — Civil Engineering

FALL	WINTER	SPRING
<b>Freshman</b>		
Mathematics 2A	Mathematics 2B	Mathematics 2C
E10	Physics 5A	Physics 5B, 5LB
CE2	CE1	CE5
Breadth	Breadth	Breadth
<b>Sophomore</b>		
Mathematics 2D	Mathematics 3A	Mathematics 3D
Physics 5C, 5LC	Chemistry 1B, 1LB	Science Elective
Chemistry 1A, 1LA	CE54	CE91
CE50	CE30	CE80
<b>Junior</b>		
CE105	CE151A	CE131, CE131L
CE125	CE170A	CE170B
CE150, CE150L	Breadth	Technical Elective
Breadth	Breadth	Breadth
<b>Senior</b>		
CE154	CE112	Capstone Design Course
Technical Elective	Technical Elective	Technical Elective
Technical Elective	Breadth	Breadth
Breadth	Breadth	Breadth

Students must obtain approval for their program of study and must see their faculty advisor at least once each year.

## Undergraduate Major in Environmental Engineering

The program objective is to prepare Environmental Engineering graduates for careers in the profession or for entry into graduate school. The curriculum includes a core of mathematics, physics, biology, and chemistry, as well as fundamental engineering science courses. Environmental Engineering courses in water and air quality, water resources management, water and air pollution control, and hazardous waste management fill much of the remaining curriculum. Design experiences in these courses are structured to give students the necessary background to design solutions to environmental problems that satisfy environmental, economic, safety, and and sociopolitical constraints.

### ADMISSIONS

**High School Students:** See page 154.

**Transfer Students.** Preference will be given to applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of calculus, one year of engineering physics (with laboratory), one year of general chemistry (with laboratory), one course in computational methods (FORTRAN, Pascal, or C), and one year of approved lower-division writing. Courses in linear algebra, differential equations, thermodynamics, dynamics, and statics are required for junior academic standing, and it is recommended that these courses be completed prior to transferring to UCI. Courses in thermodynamics, dynamics, and statics may be offered during summer session at UCI. Students should work closely with the UCI Office of Admissions and Relations with Schools to ensure that they are enrolled in the appropriate courses.

For further information, contact the School of Engineering Undergraduate Student Affairs Office at (714) 824-4334.

### REQUIREMENTS FOR THE BACHELOR'S DEGREE IN ENVIRONMENTAL ENGINEERING

Credit for at least 193 units including:

**University Requirements:** See pages 57–61.

**School Requirements:** See page 156.

#### Departmental Requirements:

**Mathematics Courses:** Mathematics 2A-B-C-D, 3A, and 3D (24 units).

**Basic Science Courses:** Chemistry 1A-B-C and 1LA-LB, 51A, 51LA, Physics 5A-B-C and 5LB-LC, and Biological Sciences 94 (at least 38 units).

**Basic Engineering Courses:** Engineering E10, CE1, CE3, CE30, CE50, CE69, CE80, and ChE60 (29 units).

**Environmental Engineering Core Courses:** Engineering ChE160, CE105, CE131, CE131L, CE150, CE150L, CE164, CE164L, CE165, CE166, CE170A, CE170B, CE171 or CE172, CE175, and two air quality electives from ME110, ME162, or ME164 (53–54 units).

**Technical Elective:** 3 or 4 units; all technical electives must be approved by the faculty advisor. Technical electives may be selected from the following list provided they have not been used to satisfy the hydrology or air quality electives: Engineering CE171, CE172, CE173, CE174, ChE165, ChE170, ME110, ME162, ME164.

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.

### PROGRAM OF STUDY

The sample program of study chart shown is typical for the major in Environmental Engineering. Students should keep in mind that this program is based upon a sequence of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their programs approved by their faculty advisor. Environmental Engineering majors must consult at least once every year with the academic counselors in the Undergraduate Student Affairs Office and with their faculty advisors.

#### Sample Program of Study — Environmental Engineering

FALL	WINTER	SPRING
<b>Freshman</b>		
Mathematics 2A	Mathematics 2B	Mathematics 2C
E10	Physics 5A	Physics 5B, 5LB
Breadth	CE1	CE3
Breadth	Breadth	Breadth
<b>Sophomore</b>		
Mathematics 2D	Mathematics 3A	Mathematics 3D
Chemistry 1A, 1LA	Chemistry 1B, 1LB	Chemistry 1C
Physics 5C, 5LC	Bio. Sci. 94	CE69
CE50	CE30	CE80
<b>Junior</b>		
CE150, CE150L	CE170A	CE131, CE131L
CE105	Chemistry 51A, 51LA	CE170B
Breadth	ChE60	Breadth
Breadth	Breadth	Breadth
<b>Senior</b>		
ChE160	CE165	CE175
CE164, 164L	CE166	Air Quality Elective
CE171/172	Breadth	Breadth
Air Quality Elective	Technical Elective	Breadth

Students must obtain approval for their program of study and must see their faculty advisor at least once each year.

### Graduate Study in Civil Engineering

Civil Engineering addresses the technology of constructed environments and, as such, embraces a wide range of intellectual endeavors. The Department of Civil and Environmental Engineering focuses its graduate study and research program on 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 Civil 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, at least 30 of which must be in nonresearch graduate-level courses. The remaining six units may be earned as graduate-level course work, individual research, or upper-division undergraduate units.

## 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 includes 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. The preliminary examination is required of each student and must be taken prior to the start of the fourth quarter of residency in the Ph.D. program. The examination may be repeated, but must be passed prior to the start of the seventh quarter of residency. 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) is part of a multicampus research unit of the University of California. Several faculty studying transportation systems engineering in the Department of Civil and Environmental Engineering participate in the Institute. Students choosing to focus their studies in transportation will find strong interdisciplinary opportunities between the Department and ITS. 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 Graphics Communication and Computer-Aided Design (4) W.** Methods for communicating design concepts and engineering data using two-dimensional and three-dimensional graphics. Fundamentals of computer-aided drafting using ACAD. Construction of three-dimensional models of structures. Introduction to design. Design project. Prerequisite: Engineering E10. (Design units: 1)

**CE2 Introduction to Civil Engineering (1) F.** Introduction to the field of Civil Engineering from the ancient civilizations to modern practice. Ethics and professional responsibility. The role of science, mathematics, and computers in civil engineering practice. (Design units: 0)

**CE3 Introduction to Environmental Science and Engineering (2) S.** Introduction to the sources of environmental problems, scientific and engineering principles affecting the fate of pollutants in the environment, and technology for pollution control and remediation. Corequisites: Mathematics 2C, Physics 5B. 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: E10. (Design units: 0)

**CE30 Statics (4) W.** Addition and resolution of forces, distributed forces, equivalent system of forces centroids, first moments, moments and products on inertia, equilibrium of rigid bodies, trusses, beams, cables. Corequisite: Mathematics 2D. Prerequisite: Physics 5A. Engineering CE30 and ME30 may not both be taken for credit. (Design units: 0)

**CE50 Engineering Economics (3) F.** Methods of conducting economic analysis, cost concepts and costing, benefit cost analysis, sensitivity and risk analysis, economics of the organization. Spreadsheet methods. Prerequisite: 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. Engineering CE54 and E54 may not both be taken for credit. (Design units: 0)

**CE69 Hazardous Waste Management (4) S.** Introduction to the field of hazardous waste management, including regulatory issues, characterization and remediation of hazardous waste sites. Corequisite: Chemistry 1C, Mathematics 3D. Prerequisites: Engineering E10 and CE50, Physics 5B. (Design units: 2)

**CE80 Dynamics (3) S.** Rigid body dynamics, momentum, and energy principles; modeling and analysis of mechanical systems. Prerequisites: Mathematics 2D, Physics 5A. Only one course from Engineering E80, CE80, and ME80 may be taken for credit. (Design units: 0)

**CE91 Engineering Thermodynamics (4) S.** Fundamentals and application of thermodynamics to engineering systems. First and second law. Equations of state and property relations. Chemical reactions. Applications to fluid mechanics, power generation, refrigeration/air conditioning, and water quality. Prerequisite: Physics 5B. Prerequisite or corequisite: Mathematics 3D. Only one course from CE91, Engineering E101, and ME91 may be taken for credit. (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: E10, CE50. (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)

**CE111 Environmental Regulations and Policy (3) S.** The legal system and its relation to environmental protection. Federal and state legal principles. Legal processes. Water and air pollution control laws. National Environmental Policy Act. (Design units: 0)

**CE112 Construction Management and Control (4) W.** Project definition, scheduling and control; material, labor, and equipment allocation; cost analysis; project organization, documentation, and reporting. Prerequisite: upper-division standing. (Design units: 1)

**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)

**CE126 Transportation Systems Analysis and Design (4) W.** Theoretical foundations of transportation planning, design, and analysis methods. Theory and application of aggregate and disaggregate models for land use development, trip generation, and destination, mode, and route choice. Transportation network analysis. Planning, design, and evaluation of system alternatives. Prerequisite: CE105. Formerly CE121, CE122. (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: 2)

**CE128 Computer-Aided Geometric Design for Civil Engineers (4) S.** Introduction to the use of computer-aided design techniques. Focuses on the design of efficient roadway alignments, gradients, and other features to accommodate the safe movement of traffic. Instruction based on the DCA computer design system. Prerequisites: Engineering E10, CE1, and CE125. (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 tunneling 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 CE170A. (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) W.** 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 and CE154. (Design units: 3)

**CE142 Advanced Strength of Materials (3) W.** Beams on elastic foundations. Combined axial and lateral loads. Curved beams. Unsymmetric bending. Shear center. Stresses and strains. Basic equations for theory of elasticity. Energy principles. Theory of torsion. Combined bending and torsion. Prerequisite: CE150 or ME150. (Design units: 0)

**CE143 Mechanics of Composite Materials (3) S.** Stress-strain relationship for orthotropic materials; invariant properties of an orthotropic lamina; biaxial strength theory for an orthotropic lamina; mechanics of materials approach to stiffness; elasticity approach to stiffness; classical lamination theory; strength of laminates; statistical theory of fatigue damage. Prerequisite: CE150 or ME150. (Design units: 0)

**CE150 Mechanics of Materials (4) F.** Stresses and strains, strain-stress diagrams, axial deformations, torsion, bending and shear stresses in beams, shear force and bending moment diagrams, combined stresses, principal stresses, Mohr's circle, deflection of beams, columns. Corequisite: CE150L. Prerequisite: CE30. CE150 and ME150 may not both be taken for credit. Formerly CE150A. (Design units: 0)

**CE150L Mechanics of Materials Laboratory (1) F.** Experimental methods and fundamentals for mechanics of materials analysis. Corequisite: CE150. Prerequisite: CE30. (Design units: 0)

**CE151A Structural Analysis and Design (5) W.** Concepts of structural design, strain energy and virtual work, influence lines, deflections, fundamentals of indeterminate analysis. Prerequisite: CE150. (Design units: 2)

**CE151B Statically Indeterminate Structures (4) S.** Fundamentals of statically indeterminate structures; strain energy and virtual work; energy theorems; deflections, moment-area methods, conjugate beam, method of virtual work, Castigliano theorem; method of consistent deformations; slope-deflection

method; approximate methods; influence lines for indeterminate structures. Prerequisite: CE151A. (Design units: 0)

**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: CE151A. (Design units: 0)

**CE154 Reinforced Concrete Design (4) F.** Ultimate strength design of systems of reinforced concrete beams, slabs, columns, and footings. Prerequisite: CE151A. (Design units: 3)

**CE155 Structural Steel Design (4) W.** 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: CE151A. (Design units: 4)

**CE156 Structural Design (4) S.** Design project which includes site planning, footing, framing, and roof design. Prerequisite: CE154. (Design units: 4)

**CE157 Lightweight Structures (4) F.** Fundamentals of torsion and bending. Analysis and design of thin-wall and composite beams. Applications of energy methods and matrix methods. Stress analysis of aircraft components. Stiffness, strength, and buckling. Prerequisite: CE150 or ME150. (Design units: 2)

**CE164 Chemistry for Environmental Engineering (3) F.** 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. Corequisite: CE164L. Prerequisites: Chemistry 1C, Engineering CE91, or Engineering ChE60. Same as Environmental Analysis and Design E161. (Design units: 0)

**CE164L Chemistry Laboratory for Environmental Engineering (1) F.** Experimental methods and fundamentals for environmental chemical analysis. Corequisite: CE164. Prerequisites: Chemistry 1C, Engineering CE91, or Engineering ChE60. Same as Environmental Analysis and Design E161L. (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. Prerequisite: CE164 and CE170B. (Design units: 2)

**CE166 Microbial Processes (4) W.** Fundamentals and design of microbial systems for solving environmental engineering problems. Topics include microbial diversity, growth energetics and kinetics, gene manipulation and genetic engineering, microbial ecology, aerobic and anaerobic treatment processes, and biodegradation of environmental contaminants. Prerequisite: CE164 or consent of instructor. (Design units: 2)

**CE170A 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; Engineering CE80, E80, or ME80. (Design units: 0)

**CE170B 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: CE170A. Formerly CE170. (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: CE170A and CE170B; 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: CE170A and CE170B; CE130 recommended. (Design units: 2)



**CE173 Water Resources Quality (4) F.** Water systems in western U.S., water laws and negotiations, water quality parameters, water use, reclamation and reuse. Modeling and design of treatment systems. Comprehensive design project. Prerequisite: CE170B. (Design units: 3)

**CE174 Contaminant Transport in Environmental Systems (4) S.** Basic principles governing transport of chemical constituents in surface and groundwater, including advection, dispersion, sorption, interphase mass transfer. Introduction to micrometeorology and atmospheric diffusion theories. Prerequisite: CE170A. (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: CE170B. (Design units: 4)

**CE181 Finite Element Method in Continuum Mechanics (3) S.** Strong, weak, and Galerkin formulations of one-, two-, and three-dimensional problems in continuum mechanics. Convergence and accuracy of finite element analyses. Shape functions, transformation, natural coordinates, and numerical integration. Concepts of computer implementation. Introduction to transient and nonlinear problems. Prerequisite: CE150 or ME150; and CE142 or consent of instructor. (Design units: 0)

**CE185 Numerical Methods and Mathematica (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. Introduction to and use of Mathematica to develop and use numerical methods. Prerequisite: E10. Only one course from Engineering CE185, ME185, and Mathematics 105A may be taken for credit. (Design units: 0)

**CE198 Group Study (1 to 4) F, W, S.** Group study of selected topics in Civil and Environmental Engineering. Prerequisite: consent of instructor. May be repeated for credit. (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)

**CEH199 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

**CE210 Legal Aspects of Architecture, Engineering, and the Construction Process (3) W.** Liability issues facing architects, engineers, and contractors. Interpretation of contract documents. Alternative clauses to standard construction contracts. Analysis of construction claims and liability. Land use controls and environmental protection. Prerequisite: 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.

**CE212 Advanced Planning and Control of Engineering (3) S.** Advanced concepts and application of engineering project planning and control systems, utilization of work breakdown structure, integration of schedule and cost control methods, management functions and team building, understanding project conflict environment and resolution, and effective time management. Prerequisite: consent of instructor.

**CE213 Cost/Schedule Management Tools and Techniques (3) F.** Application and use of modern computer-based tools for planning, estimating, cost management and control, scheduling, and reporting. Emphasis on client requirements and integrated cost and schedule philosophy. Hands-on experience through major case study and student project. Prerequisites: CE113, CE211, or consent of instructor.

**CE220A Travel Demand Analysis I (3) W.** Fundamentals of transportation systems analysis. Theoretical aspects of travel demand. Travel behavior. Modeling of performance characteristics and costs of transportation modes. In-depth presentation of travel demand modeling techniques. Development of travel choice models including mode, route, and destination choice. Equilibrium. Prerequisite: knowledge of 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.

**CE221A Transportation Systems Analysis I (3) F.** Introduction to mathematical methods and models to address logistics and urban transportation problems. Techniques include stochastic models, queueing theory, linear programming, and introductory non-linear optimization. Prerequisite: basic knowledge of probability theory. Formerly CE227.

**CE221B Transportation Systems Analysis II (3) S.** Advanced mathematical methods and models to address logistics and urban transportation problems. Topics include network flows, advanced optimization techniques, dynamic network models, and geometric models. Prerequisite: CE221A; graduate standing or consent of instructor.

**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.

**CE223A Artificial Intelligence Techniques in Transportation I (3) F.** 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. Formerly CE206A.

**CE223B Artificial Intelligence Techniques in Transportation II (3) W.** In-depth study of selected topics in the application of artificial intelligence techniques in transportation engineering, particularly artificial neural networks or knowledge-based expert systems. Prerequisites: graduate standing and CE223A or consent of instructor. Formerly CE206B.

**CE224A Transportation Data Analysis I (3) F.** Statistical analysis of transportation data sources. Analysis of categorical and ordinal data. Regression and advanced multivariate analysis methods such as discriminant analysis, canonical correlation, and factor analysis. Sampling techniques, sample error and bias, survey instrument design. Prerequisites: knowledge of probability and statistics; graduate standing or consent of instructor. Formerly CE224A, CE224B.

**CE224B Transportation Data Analysis II (3) W of even years.** Advanced methods of statistical analysis of transportation data sources; causal modeling and structural equation models. Analysis of covariance structures involving discrete choice and ordinal scale variables. Prerequisite: CE224A or equivalent. Formerly CE224C.

**CE225A Transportation Planning Models I (3) S of even 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: knowledge of introductory systems analysis. Formerly CE225.

**CE225B Transportation Planning Models II (3) S of odd years.** Design and application of comprehensive transportation models. Network development, demand modeling, and equilibrium assignment. Model calibration, validation, prediction, and evaluation. Regional modeling, site impact analysis, and circulation studies. Design of transportation alternatives. Prerequisites: CE126 or the equivalent; graduate standing or consent of instructor.

**CE226A Traffic Flow Theory I (3) F.** Traffic measurement and fundamental speed-density-flow relationships. Kinematic models. Shock waves. Statistical-kinetic theory of traffic. Introductory car-following principles and stability. Gap acceptance. Platoon dispersion. Two-fluid model. Queueing processes. Multi-regime and catastrophe models. Higher-order continuum models. Microscopic and macroscopic simulation. Prerequisite: knowledge of basic probability and statistics; graduate standing or consent of instructor.

**CE226B Traffic Flow Theory II (3) S.** Advanced mathematical analysis of vehicular flow. Detailed treatise on car-following models. Fourier and Laplace analysis of stability problems. Perturbation analysis. Derivation of macroscopic traffic flow relationships from microscopic considerations. Advanced hydrodynamic theory. Prerequisites: CE226A; graduate standing or consent of instructor.

**CE228 Urban Transportation Networks (3) S.** Analytical approaches and algorithms to the formulation and solution of the equilibrium assignment

problem for transportation networks. Emphasis on user equilibrium (UE), comparison with system optimal, mathematical programming formulation, supply functions, estimation. Estimating origin-destination matrices, network design problems. Prerequisite: CE220A or equivalent.

**CE229A Traffic Systems Operations and Control I (3) W.** Introduction to operation, control, and analysis of arterial and freeway traffic systems. Control concepts, detectors, local controllers, system master, incident-detection techniques, advanced traffic measurement technologies, intelligent vehicle-highway systems, advanced transportation management systems, advanced traveler information systems. Formerly CE226B. Prerequisite: CE226A or CE127.

**CE229B Traffic Systems Operations and Control II (3) S of odd years.** Introduction to control theory. Control formulations for corridor and network systems with freeways and arterials. Real-time control and demand management. Development and application of microscopic and macroscopic simulation models for integrated traffic systems. Dynamic models of Intelligent Vehicle-Highway Systems. Prerequisites: CE229A; graduate standing or consent of instructor. Formerly CE226C.

**CE230 Geotechnical Earthquake Engineering (3) W.** State of practice in geotechnical earthquake engineering and introduction to advanced concepts in the analysis of geotechnical engineering systems under earthquake loadings. Includes site response analysis, evaluation and mitigation of liquefaction hazards, settlement of level ground, and deformation of slopes. Prerequisite: 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 Fundamentals of Soil Behavior (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.

**CE237B Stability of Natural and Constructed Slopes (3) S.** Definition of slope failure modes, development of soil properties affecting slope stability, derivation/analysis of forces producing and resisting failures, methods of computing slope mass equilibrium in soil and rock. Review of commonly used methods of computing equilibrium and safety factors. 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.

**CE239A Geotechnical In Situ Testing (3) W.** Explains the needs, benefits, and applications of in situ testing in design and construction of foundations

and retaining structures. Discusses test procedures, data reduction, data interpretation in terms of soil properties and design parameters and applications to geotechnical engineering problems. Prerequisite: consent of instructor.

**CE239B Geotechnical Instrumentation (3) F.** Explains the need and benefits of geotechnical instrumentation to monitor field performance of braced excavations, embankments, excavated and natural slopes, underground excavations and deep foundations. Discusses planning and execution of monitoring programs including processing, reporting, and interpretation of collected data. Prerequisite: consent of instructor.

**CE241 Control of Structures (3) S.** Concept of linear system theory, classical approach to control of linear structures, modern approach to control of linear structures, control of nonlinear structures, optimal control. Prerequisite: CE247.

**CE242 Advanced Strength of Materials (3) W.** Beams on elastic foundations. Combined axial and lateral loads. Curved beams. Unsymmetric bending. Shear center. Stresses and strains. Basic equations for theory of elasticity. Energy principles. Theory of torsion. Combined bending and torsion.

**CE243 Mechanics of Composite Materials (3) S.** Stress-strain relationship for orthotropic materials; invariant properties of an orthotropic lamina; biaxial strength theory for an orthotropic lamina; mechanics of materials approach to stiffness; elasticity approach to stiffness; classical lamination theory; strength of laminates; statistical theory of fatigue damage. Prerequisite: consent of instructor.

**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: CE80 or consent of instructor.

**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 Finite Element Method in Structural Engineering (3) S.** Finite element concepts in structural engineering including variational formulations, shape functions, elements assembly, convergence, and computer programming. Stiffness of truss, beam, and frame members; two- and three-dimensional solids; plate and shell elements. Static, vibration, stability, and inelastic analyses. Prerequisite: consent of instructor.

**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 offshore 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.

**CE255 Advanced Behavior and Design of Steel Structures (3) F.**

Advanced principles of structural steel design. Analysis and design of beam-column members, braced and unbraced frames for buildings, and plate girders. Review of seismic design provisions. Design of connections. Prerequisite: CE153 or 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.

**CE261 Environmental Microbiology (3) F.** Introduction to microbial diversity, and the ecology of microorganisms in natural environments and waste treatment systems. Specific topics include the phylogenetic analysis of microbial communities using 16S rRNA sequence data; and the biochemical bases of autotrophy, phototrophy, chemoorganotrophy, and chemolithotrophy. Prerequisite: consent of instructor.

**CE262A Colloid Transport Phenomena I (3) S.** Physicochemical and biological factors governing the distribution, nature, and fate of colloidal particles in natural environments and water or wastewater treatment systems. Conservation equations and constitutive relations for colloidal suspensions. Applications to treatment systems and pollutant transport in the environment. Prerequisite: consent of instructor. Formerly CE262.

**CE262B Colloid Transport Phenomena II (3) F.** Specialized topics in colloidal phenomena, including the self-similar or fractal nature of particle aggregates, and the effect of aggregate structure on coagulation kinetics and settling velocities. Modern scaling theories for coagulation kinetics are presented and applied to environmental systems. Prerequisite: consent of instructor.

**CE263 Water and Waste Treatment (3) S.** Water and waste pollution control. Physical, chemical, and biological treatment. Reuse of wastes and ultimate disposal of nonreusable wastes. Prerequisite: CE173.

**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, multi-phase 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.

**CE267 Advanced Treatment Models (3) F.** Analysis and modeling of advanced water and waste treatment methods. Fixed film and suspended growth biological nutrient removal. Fluidized bed reactors. Analysis of non-ideal reactors. Simulation using FORTRAN/Pascal, spreadsheets, and Mathematica. Prerequisites: CE185, CE263.

**CE269 Hazardous Waste Remediation (3) W.** Emphasis on the theory and design of hazardous waste treatment systems. Overview of applicable environ-

mental 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 Groundwater Hydrology (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: CE170B or consent of instructor.

**CE274 Transport Phenomena in Porous Media (3) W.** Fundamentals of solute and particle transport in saturated porous media. Development of macroscopic transport equations. Mathematics of diffusion. Effective macroscopic coefficients. Dissolution of nonaqueous phase liquids. Analytical techniques, including Laplace and Fourier transforms, self similar and small perturbation solutions. Prerequisite: CE283 and consent of instructor.

**CE275 Numerical Methods in Subsurface Hydrology (3) S.** Numerical solutions of subsurface hydrologic phenomena. Finite difference, finite element, and other techniques are applied to mathematical models of fluid flow, mass transport, and energy transport in unsaturated and saturated porous media. Prerequisites: CE271, CE272, or CE274. Formerly CE275A.

**CE276 Stochastic Geohydrology (3) S.** Uncertainty and spatial variability in groundwater systems. Techniques for quantifying and reducing effects of uncertainty. Review of the theory of stationary processes. Kriging as best linear unbiased estimator, perturbation, and moment methods. Effects of heterogeneity on groundwater flow and transport. Prerequisites: CE274, 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, sediment and mass transport. Numerical methods. Prerequisite: CE170B or consent of instructor.

**CE279 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: CE171 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.** Strong, weak, and Galerkin formulations of one-, two-, and three-dimensional problems in continuum mechanics. Convergence and accuracy of finite element analyses. Shape functions, transformation, natural coordinates, and numerical integration. Concepts of computer implementation. Introduction to transient and nonlinear problems. Prerequisite: CE280, CE283, or consent of instructor.

**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. Prerequisite: CE285 or consent of instructor.

**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 Tower; (714) 824-4821

Allen R. Stubberud, **Department Chair**

### Faculty

Nader Bagherzadeh: Parallel processing, computer architecture  
Casper W. Barnes, Jr.: Digital signal processing  
Neil J. Bershad: Communication and information theory, signal processing  
Lubomir Bic: Parallel processing, dataflow systems, database machines  
Douglas M. Blough: Parallel processing, fault-tolerant computing  
Rui J. P. de Figueiredo: Machine intelligence and neural and soft computing; signal and image processing; applied mathematics  
Nikil D. Dutt: VLSI design automation tools, design methodologies, design languages, high-level synthesis  
Leonard Ferrari: Machine vision, signal processing, computer graphics  
Daniel D. Gajski: Parallel algorithms and architectures, design methodology, design science, CAD algorithms and tools, software/hardware co-design  
Ian A. Galton: Signal processing and communications  
Hideya Gamo: Quantum electronics, electromagnetics  
Glenn E. Healey: Machine vision, computer engineering, image processing, computer graphics, intelligent machines  
K. H. (Kane) Kim: Ultra-reliable distributed and parallel computing, real-time object-based system engineering  
Fadi J. Kurdahi: VLSI system design, design automation of digital systems  
Tomas Lang: Numerical processors and multiprocessors, parallel computer systems  
Chin C. Lee: Electronic packaging, thermal management, integrated optics  
Henry P. Lee: Optoelectronics semiconductor materials and devices  
Guann Pyng Li: High-speed semiconductor technology, optoelectronic devices, integrated circuit fabrication and testing  
Kwei-Jay Lin: Real-time systems, distributed systems  
Orhan Nalcioğlu: Nuclear magnetic resonance imaging and spectroscopy, digital radiography, computed tomography, medical imaging  
Richard D. Nelson: Sensors, microelectronics, Photonics, medical imaging  
Alexandru Nicolau: Architecture, parallel computation, programming languages and compilers  
Robert M. Saunders: Electromechanics, power systems  
Issac Scherson: Parallel computing architectures, massively parallel systems, parallel algorithms, interconnection networks, performance evaluation  
Phillip C.-Y. Sheu: Database systems, interactive multimedia systems  
Roland Schinzinger: Electromagnetics, power systems, operations research  
Kai-Yeung (Sunny) Siu: Artificial neural networks, high-performance computing, fault-tolerant distributed systems, parallel algorithms

Jack Sklansky: Pattern recognition, machine vision, medical imaging, neural learning, computer engineering  
Keyue M. Smedley: Power electronics  
Gregory J. Sonek: Devices, electrooptics and fiber optics, biomedical applications, optoelectronic  
Allen R. Stubberud: Control systems, digital signal processing, estimation and optimization  
Tatsuya Suda: Computer networks, distributed systems, performance evaluation  
Harry H. Tan: Communication and information theory, stochastic processes  
Chen S. Tsai: Integrated and fiber optics, devices, and materials, acousto-optics, magneto-optics, acoustic microscopy  
Wei Kang (Kevin) Tsai: Data communication networks, neural networks, parallel algorithms and architectures, CAD for VLSI systems engineering  
Rainer Zuleeg: Semiconductor devices

### Lecturers

Syed Ahmed: Electric power systems  
Maqsood Chaudhry: Field theory, numerical analysis, analog circuits  
Martin Dowd: Computer graphics  
Mohammed S. Santana: Control 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.

The undergraduate curriculum in Computer Engineering addresses the design and analysis of digital computers, including both software and hardware. Computer design includes topics such as computer architecture, VLSI circuits, design automation, system software, and data structures and algorithms. Computer Engineering courses include programming in high-level languages such as Pascal, C, FORTRAN; use of software packages for analysis and design; design of system software such as editors, compilers, debuggers, and operating systems; and application of computers in solving engineering problems. Laboratories in both hardware and software experiences are integrated within the curriculum.

Graduates of Computer Engineering will find a variety of career opportunities. The information technology areas include computer hardware and software design, design of computer-based control systems, application software, artificial intelligence, data storage and retrieval, graphics, pattern recognition, computer modeling, parallel computing, and operating systems.

## Undergraduate Major in Computer Engineering

The undergraduate Computer Engineering curriculum includes a core of mathematics, physics, and chemistry. Engineering courses in fundamental areas fill in much of the remaining curriculum.

### ADMISSIONS

**High School Students:** See page 154.

**Transfer Students.** Preference will be given to applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of calculus, one course in general chemistry, one year of engineering physics (with laboratory), one course in computational methods (C or C++), and one year of approved lower-division writing. Courses in linear algebra, differential equations, discrete mathematics, second-year engineering physics (with laboratory), digital systems, and systems programming are required for junior academic standing, and it is recommended that these courses be completed prior to transfer.

Digital systems and network analysis may be offered during summer session at UCI. Students should work closely with the UCI Office of Admissions and Relations with Schools to ensure that they are enrolled in the appropriate courses.

For further information, contact the School of Engineering Undergraduate Student Affairs Office at (714) 824-4334.

### REQUIREMENTS FOR THE BACHELOR OF SCIENCE DEGREE IN COMPUTER ENGINEERING

Credit for at least 191.5 units including:

**University Requirements:** See pages 57-61.

**School Requirements:** See page 156.

#### Departmental Requirements:

**Mathematics Courses:** Mathematics 2A-B-C, 3A, 3D, and 6A (24 units).

**Basic Science Courses:** Chemistry 1A, Physics 5A-B-C-D and 5LB-LC-LD, and one course selected from Physics 5E, Biological Sciences 91, or Biological Sciences 94 (at least 28.5 units).

**Basic Engineering Courses:** ECE11, ECE20, ECE31, ECE31LB, ECE40, ECE70A, ECE70B, ECE70LB (27 units).

**Computer Engineering Core Courses:** Information and Computer Science (ICS) 23E, ICS161; Engineering ECE110A, ECE110LA, ECE110B, ECE110LB, ECE113, ECE120A, ECE120B, ECE132, ECE132L, ECE142, ECE145, ECE151, ECE180 or Mathematics 114A, and ECE186 (56 units).

**Technical Electives:** 11 units; all technical electives must be selected from the following list and must be approved by the faculty advisor: ECE104, ECE115A, ECE128, ECE135A, ECE135B, ECE136, ECE137, ECE143, ECE161, ICS 142, ICS 184.

### PLANNING A PROGRAM OF STUDY

The sample program of study chart shown is typical for the major in Computer Engineering. Students should keep in mind that this program is based upon a sequence of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their program approved by their advisor. Computer Engineering majors must consult at least once every year with the academic counselors in the Undergraduate Student Affairs Office and with their faculty advisor.

### Sample Program of Study — Computer Engineering

FALL	WINTER	SPRING
<b>Freshman</b>		
Mathematics 2A	Mathematics 2B	Mathematics 2C
Chemistry 1A	Physics 5A	Physics 5B, 5LB
Breadth	ECE11	ECE20
Breadth	Breadth	Breadth
<b>Sophomore</b>		
Mathematics 6A	Mathematics 3D	Breadth
Physics 5C, 5LC	Physics 5D, 5LD	ECE40
ECE31	ECE31LB	ECE70B, 70LB
Mathematics 3A	ECE70A	Breadth
<b>Junior</b>		
ICS23E	ECE110A, 110LA	ECE110B, 110LB
ECE113	ECE132	ECE132L
ECE180 or	ICS 161	ECE142
Mathematics 114A	Breadth	Breadth
Breadth		
<b>Senior</b>		
ECE151	ECE120A	ECE120B
Technical Elective	ECE145	ECE186
Technical Elective	Technical Elective	Breadth
Breadth	Science Elective	

Students must obtain approval for their program of study and must see their faculty advisor at least once each year.

## 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 take 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 Electro-optics and 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 154.

**Transfer Students.** Preference will be given to applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of calculus, one course in general chemistry (with laboratory), one year of engineering physics (with laboratory), one course in computational methods (C or C++), and one year of approved lower-division writing. Courses in linear algebra, differential equations, second-year engineering physics (with laboratory), digital systems, dynamics, and network analysis are required for junior academic standing, and it is recommended that these courses be completed prior to transfer. Courses in digital systems, dynamics, and network analysis may be offered during the summer session at UCI. Students should work closely with the UCI Office of Admissions and Relations with Schools to ensure that they are enrolled in the appropriate courses.

For further information, contact the School of Engineering Undergraduate Student Affairs Office at (714) 824-4334.

## REQUIREMENTS FOR THE BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING

Credit for at least 185 units including:

**University Requirements:** See pages 57-61.

**School Requirements:** See page 156.

### Departmental Requirements:

**Mathematics Courses:** Mathematics 2A-B-C-D, 3A, and 3D (24 units).

**Basic Science Courses:** Chemistry 1A and 1LA, Physics 5A-B-C-D-E and 5LB-LC-LD-LE (at least 31 units).

**Basic Engineering Courses:** Engineering E80, E101, ECE11, ECE31, ECE31LA, ECE70A, ECE70B, and ECE70LB (23 units).

**Electrical Engineering Core Courses:** Engineering ECE110A, ECE110LA, ECE110B, ECE110LB, ECE113, ECE113L, ECE120A, ECE120B, ECE140A, ECE140LA, ECE151, ECE170, ECE180 or Mathematics 114A, and ECE186 (43 units).

**Technical Electives:** 19 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 Electro-optics and Solid-State Devices:** 11 units selected from Engineering ECE114A, ECE114B, ECE115A, ECE176, ECE176L, ECE177, ECE177L, ECE178, ECE178L, ECE198 (Special Topics in Electro-optics or Solid State Materials/Devices).

**Specialization in Microelectronics Systems Manufacturing:** At least 12 units. Required courses are Engineering ECE116, ECE117, ECE151L. Recommended courses are Engineering ECE198, Management 183, Management 188.

**Specialization in Power Systems:** 12 units selected from Engineering E20, ECE140B, ECE160, ECE160L, ECE163, ECE163L, ECE199 (up to 3 units).

**Specialization in Systems and Signal Processing:** 12 units selected from Engineering ECE128, ECE135A, ECE135B, ECE136, ECE140B, ECE163, ECE163L, ECE198 (Special Topics in Computer Graphics or Digital Signal Processing Laboratory), or ECE199 (up to 3 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. 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.

## PROGRAM OF STUDY

Students must complete all required freshman and sophomore courses before they enroll in any junior or senior ECE courses.

The sample program of study chart shown is typical for the accredited major in Electrical Engineering. Students should keep in mind that this program is based upon a rigid set of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Therefore, the course sequence should not be changed except for the most compelling reasons. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their programs approved by their advisor. Electrical Engineering majors must consult with the academic counselors in the Undergraduate Student Affairs Office and with their faculty advisors at least once a year.

## Sample Program of Study — Electrical Engineering

FALL	WINTER	SPRING
<b>Freshman</b>		
Mathematics 2A	Mathematics 2B	Mathematics 2C
Chemistry 1A, 1LA	Physics 5A	Physics 5B, 5LB
Breadth	ECE11	Breadth
	Breadth	Breadth
<b>Sophomore</b>		
Mathematics 2D	Mathematics 3D	Mathematics 3A
Physics 5C, 5LC	Physics 5D, 5LD	Physics 5E, 5LE
Breadth	ECE70A	ECE70B, 70LB
ECE31, 31L	Breadth	E80
<b>Junior</b>		
ECE170	E101	ECE186
ECE113, 113L	ECE110A, 110LA	ECE110B, 110LB
ECE180 or Math 114A	ECE120A	ECE120B
Breadth	Breadth	Breadth
<b>Senior</b>		
ECE151	Technical Elective	Technical Elective
ECE140A, 140LA	Technical Elective	Technical Elective
Technical Elective	Breadth	Breadth

Students must obtain approval for their program of study and must see their faculty advisor at least once each year.

## Graduate Study in Electrical and Computer Engineering

The Department offers M.S. and Ph.D. degrees in Electrical and Computer Engineering with concentrations in Computer Engineering and in Electrical Engineering. The Computer Engineering concentration covers VLSI design, architectures, and systems. The Electrical Engineering concentration includes optical and solid-state devices, and systems engineering and signals processing.

Because most graduate courses are not repeated every quarter, students should make every effort to begin their graduate program in the fall.

## MASTER OF SCIENCE DEGREE GENERAL REQUIREMENTS

The Department of Electrical and Computer Engineering offers two plans for the M.S. degree: a thesis option and a comprehensive examination option. For both options, students are required to develop and obtain approval by the Department's graduate advisor of a complete program of study. Opportunities are available for part-time study toward the M.S. degree. The program of study must be completed within four calendar years from the date of admission.

### Plan I: Thesis Option

The thesis option requires completion of 36 units of study; the completion of an original research investigation; the writing of the thesis describing it; and approval of the thesis by a thesis committee. Required undergraduate courses and seminar courses such as ECE294 and ECE295 may not be counted toward the 36 units. No more than four units of ECE299 and three units of undergraduate electives may be counted.

The thesis option is available for those graduate students who might best benefit from intense concentration on a specific problem. A committee of three full-time faculty members is appointed to guide development of the thesis and, to approve it.

### Plan II: Comprehensive Examination Option

The comprehensive examination option requires the completion of 36 units. Students must take four courses among the concentration core courses (see listings under Computer Engineering and Electrical Engineering concentrations) 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 taken must be completed with a grade of B or better. Required undergraduate courses and seminar courses such as ECE294 and ECE295 may not be counted toward the 36 units. No more than three units of ECE299 and six units of undergraduate electives may be counted.

All M.S. students with the comprehensive examination option are required to enroll in the weekly departmental seminar, ECE294, for at least two quarters.

## DOCTOR OF PHILOSOPHY DEGREE GENERAL REQUIREMENTS

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 pass: admission to the Ph.D. program by the faculty; within one year of arrival on the campus, passage of a preliminary examination on 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; development of a research proposal; formal advancement to candidacy through qualifying examination conducted on behalf of the Irvine division of the Academic Senate; completion of a significant research investigation, and completion and approval of a dissertation. Four quarters of ECE294 must be completed. 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 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 Test in one of several areas (see listings under Computer Engineering and Electrical Engineering concentrations). 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.

## COMPUTER ENGINEERING CONCENTRATION

Computer engineering is concerned with the set of engineering principles which are used for design and construction of information-processing systems. The engineering design procedures are based on both the computational principles and theories discovered in the field of computer science and new highly integrated component devices made by electrical engineers. Computer engineers are concerned with design constraints such as cost, performance, reliability, size, and power consumption. The main research activities of the faculty that are related to computer engineering are in the areas of fault-tolerant computing, parallel and distributed computer systems, ultra-reliable real-time computer systems, VLSI architectures, computer design automation, numerical processing, computer graphics, intelligent management, and computer communication networks.

In addition to the general departmental requirements, the following requirements must be met.

## Master of Science Degree

### Plan I: Thesis Option

Four out of five Computer Engineering core courses must be completed with a grade of B or better. Three additional Computer Engineering concentration courses must be completed. With approval of the thesis advisor and the Department's graduate advisor, two of these courses may be non-seminar graduate courses outside of the Computer Engineering concentration list. These courses must be related to the student's thesis topic. No more than 12 units of ECE296 (M.S. Thesis Research) may be counted toward the degree. Two quarters of ECE294 must be completed.

### Plan II: Comprehensive Examination Option

A minimum of seven Computer Engineering concentration courses of which four are core courses must be completed. A minimum of three additional non-seminar graduate courses are required.

## Doctor of Philosophy Degree

A GRE Subject Test in Mathematics or Computer Science is required for the breadth portion of the preliminary examination. A public Ph.D. dissertation defense must be given.

## Concentration Courses

Core courses are indicated by an asterisk (\*) following the course number: ECE206, ECE207, ECE231\*, ECE233\*, ECE234A-B, ECE235\*, ECE238, ECE251\*, ECE252\*, ECE253, ECE254, ECE257, and ECE258.

## ELECTRICAL ENGINEERING CONCENTRATION

The Electrical Engineering faculty study the following areas: optical and solid-state devices, including quantum electronics and optics, integrated electro-optics and acoustics, design of semiconductor devices and materials, and scanning acoustic microscopy; and systems engineering and signal processing, including machine vision, signal processing, power systems, neural networks, communications networks, systems engineering, control systems, and manufacturing systems.

In addition to the general departmental requirements, the following requirements must be met.

## Master of Science Degree

### Plan I: Thesis Option

A minimum of seven Electrical Engineering concentration courses must be completed. No more than eight of the required 36 units may be from ECE296 (M.S. Thesis Research).

### Plan II: Comprehensive Examination Option

A minimum of nine Electrical Engineering concentration courses of which four are core courses must be completed.

## Doctor of Philosophy Degree

A GRE Subject Test in Physics, Mathematics, Computer Science, or Engineering is required for the breadth portion of the preliminary examination.

## Concentration Courses

Core courses are indicated by an asterisk (\*) following the course number: ECE206, ECE207, ECE210A-B, ECE212, ECE217A-B, ECE222, ECE227A-B, ECE228A-B, ECE229A-B, ECE230A-B, ECE232, ECE233\*, ECE234A-B, ECE235\*, ECE236, ECE237, ECE240A\*-B-C, ECE241A-B-C, ECE242, ECE251, ECE260, ECE263, ECE270, ECE273A-B, ECE275A\*-B-C, ECE279A\*-B, ECE281A, ECE281B, and ECE287A\*.



## 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.

**ECE11 Computational Methods in Electrical and Computer Engineering (4) W.** An introduction to computers and structured programming. Binary Data Representation. Hands-on experience with a high-level structured programming language. Introduction to algorithm efficiency. Applications of structured programming in solving engineering problems. Prerequisite: Mathematics 2A. (Design units: 0)

**ECE20 System Programming I (4) S.** Advanced programming concepts for system software including data types, pointers, recursion and modules. The UNIX programming environment and software development tools. Prerequisite: ECE11. Formerly ECE11B. (Design units: 1)

**ECE31 Introduction to Digital Systems (4) W.** Digital representation of information. Specification of combinational and sequential systems. Analysis and design of networks of gates and flip flops. Standard modules and their use. *Introduction to algorithmic systems: datapath and control.* Prerequisite: ECE11. (Design units: 2)

**ECE31LA Introduction to Digital Systems Laboratory (1) F, Summer.** Laboratory to accompany ECE31 for non-computer engineering majors. Corequisite: ECE31. (Design units: 1)

**ECE31LB Introduction to Digital Logic Laboratory (3) W.** Introduction to common digital integrated circuits: gates, memory circuits, MSI components. Operating characteristics, specifications, and applications. Design of simple combinational and sequential digital systems such as arithmetic processors, game-playing machines. Construction and debugging techniques, using CAD tools and Breadboards. Prerequisites: ECE20, ECE31. (Design units: 3)

**ECE40 System Programming II (4) S.** Advanced programming techniques including data abstraction, object-orientation, code reuse, and design methodology. Techniques for window programming and advanced user interface design. Prerequisite: ECE20. ECE40 and Information and Computer Science 54 may not both be taken for credit. (Design units: 2)

**ECE70A Network Analysis I (3) W.** Modeling and analysis of electrical networks. Basic network theorems. Sinusoidal steady state and transient analysis of RLC networks and the impedance concept. Corequisite: Mathematics 3A or 3D. Prerequisites: ECE11 and Physics 5B. Formerly ECE70. (Design units: 1)

**ECE70B Network Analysis II (4) S.** Laplace transforms, complex frequency, and the s-plane. Network functions and frequency response, including resonance. Bode plots. Two-port network characterization. Corequisite: ECE70LB. Prerequisites: ECE11, ECE70A. Formerly ECE75. (Design units: 1)

**ECE70LB Networks Analysis II Laboratory (1) S.** Laboratory to accompany ECE70B. Corequisite: ECE70B. Prerequisites: ECE11 and ECE70A. Formerly ECE75L. (Design units: 1)

**ECE72 Network Theory and Operational Amplifiers (3) S.** Basic network theorems and analysis. Sinusoidal steady state and transient response of RLC circuits and the impedance concept. Analysis and design of operational amplifier circuits. Corequisite: Mathematics 3A or 3D. Prerequisites: Physics 5B; Engineering E10 or ECE11. Open to Mechanical or Aerospace Engineering majors only. (Design units: 1)

### 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. Corequisite or prerequisite: Mathematics 3A or 3D. (Design units: 2)

**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: ECE70B, ECE70LB, and ECE113. (Design units: 2)

**ECE110LA Electronics I Laboratory (1) W.** Laboratory accompanying ECE110A. Corequisite: ECE110A. (Design units: 1)

**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. (Design units: 2)

**ECE110LB Electronics II Laboratory (1) S.** Laboratory accompanying ECE110B. Corequisite: ECE110B. (Design units: 1)

**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. (Design units: 4)

**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: ECE70A, Physics 5D. (Design units: 0)

**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: ECE70A, Physics 5D. (Design units: 1)

**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. (Design units: 2)

**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: ECE113. (Design units: 2)

**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: ECE31, ECE110A, ECE110B, and consent of instructor. (Design units: 4)

**ECE116 Wafer Fabrication Processes (4) W.** Fabrication of microelectronic components on a silicon wafer. Processes include lithographic techniques, oxidation, diffusion, ion implementation, thin film deposition, etching techniques, diagnostic techniques, wafer probing and process integration. Prerequisite: ECE113.

**ECE117 Microelectronics Manufacturing Technology (4) S.** Manufacturing technology leading to the production of microelectronic devices. Topics include cleanroom, electronic materials, vacuum technology, thin film deposition, etching techniques, bonding techniques, thermal management, stress analysis, injection molding, electronic packaging and process integration. Prerequisite: ECE113.

**ECE118 Reliability and Yield in Microelectronic Circuits (4) W.** Reliability issues in the design of Very Large Scale Integrated Circuits: VLSI failure modes, yield and reliability modeling, yield enhancement techniques, wafer-scale integration and reconfiguration. Introduction to testing and testing techniques. Economics of design, test, and manufacturing. Prerequisites: ECE151 and ECE186.

**ECE120A Signals and Systems I (4) W.** Studies of signals and systems. Application of Fourier series and Fourier and Laplace transforms to continuous-time system analysis. Convolution and modulation theory. Prerequisites: ECE70B, ECE180 or Mathematics 114A. (Design units: 0)

**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. (Design units: 0)

**ECE128 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. Formerly ECE128A. (Design units: 1)

**ECE132 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. Prerequisites: ECE31LB, ECE132 and Information and Computer Science 152 may not both be taken for credit. (Design units: 4)

**ECE132L Organization of Digital Computers Laboratory (3) S.** Techniques for the design of microprocessors (RISC and CISC), and microcode-based architectures. Covers all aspects of the design ranging from concept development to implementation and testing using FPGA chips. Prerequisites: ECE31LB and ECE132. Formerly ECE132LB. (Design units: 3)

**ECE135A Digital Signal Processing (3) F.** Nature of sampled data, sampling theorem, difference equations, data holds, z-transform, w-transform, digital filters, Butterworth and Chebyshev filters, quantization effects. Prerequisites: ECE120B and ECE186. (Design units: 2)

**ECE135B Digital Signal Processing Design and Laboratory (3) S.** Students plan and perform 10 core laboratory exercises covering signal synthesis and analysis with various filter and frequency transform processes. Models of radio and radar/sonar signal processing are included. Prerequisite: ECE135A. (Design units: 3)

**ECE136 Introduction to 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. (Design units: 2)

**ECE137 Parallel Computer Systems (3) W.** General introduction to parallel computing focusing on parallel algorithms and architectures. Parallel models: Flynn's taxonomy, dataflow models. Parallel architectures: systolic arrays, hypercube architecture, shared memory machines, dataflow machines, reconfigurable architectures. Parallel algorithms appropriate to each machine type area also discussed. Prerequisites: ECE20 and ECE132. (Design units: 1)

**ECE140A Introduction to Control Systems (4) F.** Modeling, stability, and specifications of feedback control systems. Root locus, Bode plots, Nyquist criteria, and state-space methods for dynamic analysis and design. Corequisite: ECE140LA. Prerequisites: ECE11, ECE110B, ECE110LB, ECE120B. (Design units: 2)

**ECE140LA Control Systems I Laboratory (1) F.** Laboratory accompanying ECE140A. Corequisite: ECE140A. (Design units: 1)

**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: ECE31, ECE140A, ECE140LA. (Design units: 2)

**ECE142 System Software (4) S.** Batch systems multiprogramming, procedure implementation, processes, parallelism, critical sections, deadlocks, communication, multiprocessing, multilevel memory management, binding, name management, file systems, protection, resource allocation, scheduling. Experience with concurrent programming, synchronization mechanisms, interprocess communication. Prerequisite: Information and Computer Science 23E. ECE142 and ICS 143 may not both be taken for credit. (Design units: 2)

**ECE143 Microprocessor Interface Techniques (3) W.** Concepts and techniques necessary for using mini- and micro-computer systems to gather data and control equipment. Covers microprocessor architecture and peripheral devices. Experience with a microprocessor system is provided. Functional requirements are realized through software and I/O hardware design. Prerequisite: ECE132LB. (Design units: 3)

**ECE145 Senior Design Project (4) W.** Conception, planning, implementation, programming, testing of an approved project. Options include: parallel processing, VLSI design, microprocessor-based design, among others. Prerequisite: senior standing. (Design units: 4)

**ECE151 Introduction to VLSI (4) F.** A first course in the design of Very Large Scale Integrated (VLSI) systems and chips. Review of CMOS VLSI technology. Analysis and synthesis of basic and complex CMOS gates. Introduction to CAD methodology and usage of CAD Tools. Prerequisite: ECE132. (Design units: 4)

**ECE151L VLSI Design Laboratory (4) W.** Train students to apply the latest computer design techniques and VLSI design tools for the implementation of VLSI chips. As part of this course, students will design, test, and develop the layout for final submission of the chip to a foundry for fabrication. Prerequisite: ECE151.

**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: ECE70B. (Design units: 2)

**ECE160L Energy Conversion Laboratory (1) W.** Laboratory exercises supplementing the content of ECE160. Corequisite or prerequisite: ECE160. Prerequisite: ECE110LA. (Design units: 0)

**ECE161 Introduction to Computer Networks (4) W.** Introduction to the techniques for design and analysis of computer networks. Layered network architecture. Communication media and hardware. Local area network (LAN) topologies and access protocols. Flow and congestion control. Introduction to network operating systems. Queuing and reliability analyses. Prerequisite: ECE142. (Design units: 2)

**ECE163 Electric Power Systems (4) F.** Generation, transmission, and use of electrical energy. Fault calculation, protection, stability, and power flow. Corequisite: ECE163L. Prerequisite: ECE70B. (Design units: 1)

**ECE163L Electric Power Systems Laboratory (1) F.** Experiments and field trips relevant to studies in power systems. Corequisite or prerequisite: ECE163. Prerequisite: ECE110LA. (Design units: 0)

**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. (Design units: 1)

**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. Corequisite: Mathematics 3A or 3D. Prerequisite: Physics 5D. (Design units: 0)

**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. (Design units: 1)

**ECE176L Engineering Optics Laboratory (1) F.** Basic optics and laser experiments. Lens, prism, grating, diffraction, interferences, He-Ne and CO<sub>2</sub> gas lasers. Corequisite: ECE176. (Design units: 0)

**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. (Design units: 1)

**ECE177L Engineering Electrodynamics Laboratory (1) S.** Transmission line, waveguides, antenna microwave oscillators, and detectors. Corequisite: ECE177. (Design units: 0)

**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. (Design units: 1)

**ECE178L Optical Electronics Laboratory (1) W.** Optical guided waves, electro-optical modulator, acousto-optical modulator, dye and semiconductor lasers. Corequisite: ECE178. (Design units: 0)

**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. Corequisite: ECE70B. Prerequisite: Mathematics 3A or 3D. Only one course from ECE180, Mathematics 114A, and Mathematics 147 may be taken for credit. (Design units: 0)

**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. (Design units: 0)

**ECE198 Group Study (1 to 4) F, W, S.** Group study of selected topics in engineering. (Design units: varies)

**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. (Design units: varies)

**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. (Design units: varies)

**ECEH199 Individual Study for Honors Students (1 to 5) F, W, S.** For undergraduate honor students majoring in Electrical Engineering. Independent reading, research, or design under the direction of a faculty member or group of faculty members in Electrical and Computer Engineering. Restricted to Campuswide Honors students. May be repeated for credit.

## 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.

**ECE211 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. Formerly ECE236.

**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/1 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: ECE135A, ECE240A, and ECE287A.

**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 support. System software design languages and modeling analysis. Prerequisite: ECE142 or equivalent.

**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 Digital Image Processing (3) W.** Pixel-level digital image representation and elementary operations; Fourier and other unitary transforms; compression, enhancement, filtering, and restoration; laboratory experience is provided. Prerequisite: ECE135A.

**ECE234B Digital Image Understanding (3) S.** Image and texture segmentation and symbolic representation; three-dimensional modeling; relational structures; three-dimensional object recognition; three-dimensional scene analysis and interpretation. Prerequisites: ECE136 and ECE 234A.

**ECE235 Design and Analysis of Algorithms (3) W.** The analysis of computer algorithms from a practical standpoint. Algorithms for symbolic and numeric problems such as sorting, searching, curve fitting, and FFT considered. Analysis includes algorithm time and space complexity.

**ECE236A-B Artificial Neural Networks (3-3) W, S.** 236A: Fundamental concepts and models of artificial neural networks (ANNs); single- and multi-layer ANNs; recurrent feedback ANNs; applications to pattern classification and interpretation, and intelligent control. 236B: Computational aspects of ANNs with applications to intelligent computing. Prerequisites: ECE120A-B.

**ECE237 Medical Imaging Systems (3) W, S.** Scientific and engineering principles for imaging, visualizing, and analyzing structures of the human body. Imaging modalities include x-ray projection radiography, ultrasonic imaging, magnetic resonance imaging, computed tomography. Visualization and analysis includes curve detection, flexible image registration, noise suppression, volumetric estimation. Prerequisite: ECE120A.

**ECE238 Topics in Computer Engineering (3).** New research results in computer engineering. Prerequisite: consent of instructor. May be repeated for credit.

**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.

**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: 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.

**ECE253 Real-Time Computer Systems (3).** Time bases, clock synchronization, real-time communication protocols, specification of requirements, task scheduling. Validation of timelines, real-time configuration management. Prerequisites: ECE231 and ECE233.

**ECE254 Fault-Tolerant Computing (4).** Various aspects of fault-tolerant computing systems. Includes hardware and software failures, reliability, mechanism to recover from failures. Prerequisite: consent of instructor. Same as Information and Computer Science 250.

**ECE257 Parallel Database Systems Engineering (3).** Data models, database management systems, parallel algorithms, implementation issues, database machines, applications of parallel database systems. Prerequisite: Information and Computer Science 184 or equivalent.

**ECE258 Numerical Processors (3).** Number representations. Fast algorithms and implementations for addition, multiplication, division, and square root. Floating-point processors. On-line arithmetic. Function evaluation. CORDIC processors. Residue arithmetic. Prerequisite: ECE132.

**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.

**ECE266A Advanced Power Electronics (3).** New developments in power electronics: switching converter topologies, control, magnetics, and applications. Prerequisite: ECE110A, ECE140B, ECE166, or consent of instructor.

**ECE266B Advanced Topics in Power Electronics (3).** AC motor drive, DC brushless motor drives, and magnetic levitation. Prerequisite: ECE266A.

**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.

**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.

**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; optical 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.

**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.

**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.

**ECE298 Topics in Electrical and Computer Engineering (2 to 4) F, W, S.** Study of Electrical and Computer Engineering concepts. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

**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

S4221 Engineering Gateway; (714) 824-8451  
William E. Schmitendorf, **Department Chair**

### Faculty

James E. Bobrow: Nonlinear control systems, optimization methods, robotics  
Donald Dabub: Mathematical modeling of air pollution dynamics, parallel computations in environmental sciences

Derek Dunn-Rankin: Combustion, optical particle sizing, particle aerodynamics, laser diagnostics and spectroscopy

Donald K. Edwards: Heat and mass transfer

Said E. Elghobashi: Direct numerical simulation of turbulent, chemically reacting and dispersed two-phase flows

Carl A. Friehe: Fluid mechanics, turbulence, micrometeorology, instrumentation

Faryar Jabbari: Robust and nonlinear control theory, adaptive parameter identification

John C. LaRue: Fluid mechanics, heat transfer, turbulence, instrumentation

Enrique J. Laverna: Solidification processing of metals, powder metallurgy, intermetallics

Feng Liu: Computational fluid dynamics

J. Michael McCarthy: Kinematic theory of spatial motion, design of mechanical systems, cooperating robots

Kenneth D. Mease: Flight guidance and control, geometric nonlinear control

Melissa E. Orme: Droplet dynamics, fluid mechanics of materials synthesis, netform manufacturing

Dimitri Papamoschou: Compressible mixing and turbulence, supersonic jet noise reduction, diagnostics for compressible flow, acoustics in moving media

Roger H. Rangel: Fluid dynamics and heat transfer of multiphase systems including spray combustion, atomization, and metal spray solidification; applied mathematics

G. Scott Samuelson: Energy, propulsion, combustion and environmental conflict; turbulent transport in complex flows, spray physics, NO<sub>x</sub> and soot formation, laser diagnostics and experimental methods; application of engineering science to practical propulsion and stationary systems; environmental ethics

William E. Schmitendorf: Control theory and applications

Athanasios Sideris: Control systems, neural networks

William A. Sirignano: Combustion theory and computational methods, multi-phase flows, turbulent reacting flows, flame spread

Harry Skinner: Bio-materials and design of implants, knee joint proprioception, gait analysis, finite element analysis for fracture prediction in bones

Andrew J. Szeri: Convective/diffusive transport, nonlinear dynamics and bifurcation theory, perturbation methods, continuum mechanics

Edriss Titi: Partial differential equations, nonlinear analysis

Frederic Yui-Ming Wan: Applied mathematics

### Lecturers

Donald J. Barrus: Computer-aided design, computer-aided manufacturing

David J. Dimas: Finite element analysis and structural dynamics

Eugene Evancoe: Design and analysis of signal conditioning and data acquisition circuits

Mechanical engineers design, manufacture, and control machines ranging from robots to aircraft and spacecraft, design engines and power plants that drive these machines, analyze the environmental impact associated with power generation, and strive to promote environmental quality. To achieve their goals, mechanical engineers use mathematics, physics, and chemistry together with engineering science and technology in areas such as fluid mechanics, heat transfer, dynamics, controls, and atmospheric science.

Mechanical Engineering students at UCI learn the problem-solving, modeling, and testing skills required to contribute to advances in modern technology.

Mechanical Engineering undergraduates complete required courses that provide engineering fundamentals and technical electives that allow students to study particular areas of interest. Specializations are available in: Aerospace Engineering, Combustion/Propulsion, Environmental Engineering, Heat Transfer/Fluid Mechanics, Materials Science and Engineering, and Mechanical Systems. Independent research opportunities allow students to pursue other avenues for focusing their studies.

Since mechanical engineering covers a wide spectrum of subjects, many students use the undergraduate curriculum as preparation for further studies in engineering or in areas such as medicine, law, and management.

Aerospace Engineering deals with all aspects of aircraft and spacecraft design and operation, thus requiring the creative use of many different disciplines. Aerospace engineers work on the forefront of technological advances and are likely to be leaders in scientific discoveries.

The undergraduate curriculum in Aerospace Engineering includes courses in subsonic and supersonic aerodynamics, propulsion, controls and performance, light-weight structures, and advanced materials. In the senior capstone course, students work in teams on the preliminary design of a commercial jet transport.

Career opportunities for Aerospace Engineering graduates are in the broad range of aerospace industries, including manufacturers of aircraft, spacecraft, engines, and aircraft/spacecraft components; makers of aircraft/spacecraft simulators; and government research laboratories.

Areas of graduate study and research are the thermal and fluid sciences, combustion and propulsion, mechanical systems and robotics, environmental 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, and guidance and control.

## Undergraduate Major in Aerospace Engineering

The undergraduate Aerospace Engineering curriculum includes a core of mathematics, physics, and chemistry. Engineering courses in fundamental areas constitute much of the remaining curriculum.

### ADMISSIONS

**High School Students:** See page 154.

**Transfer Students.** Preference will be given to applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of calculus, one year of engineering physics (with laboratory), one course in computational methods (FORTRAN, Pascal, C or C++), and one year of approved lower-division writing. Courses in linear algebra, differential equations, second-year engineering physics (with laboratory), dynamics, thermodynamics, statics, materials science, and electronics and power systems are required for junior academic standing, and it is recommended that these courses be completed prior to transfer.

Dynamics, materials science, thermodynamics, and statics may be offered during the summer session at UCI. Students should work closely with the UCI Office of Admissions and Relations with Schools to ensure that they are enrolled in the appropriate courses.

For further information, contact the School of Engineering Undergraduate Student Affairs Office at (714) 824-4334.

### REQUIREMENTS FOR THE BACHELOR'S DEGREE IN AEROSPACE ENGINEERING

Credit for at least 191.5 units including:

**University Requirements:** See pages 57-61.

**School Requirements:** See page 156.

#### Departmental Requirements:

**Mathematics Courses:** Mathematics 2A-B-C-D, 3A, and 3D (24 units).

**Basic Science Courses:** Chemistry 1A-B and 1LA-LB and Physics 5A-B-C-D and 5LB-LC-LD (at least 30.5 units).

**Basic Engineering Courses:** Engineering E10, E54, ECE72, ME30, ME80, and ME91 (23 units).

**Aerospace Engineering Core Courses:** Engineering AE108, AE112, AE135, AE136, AE140, AE146, AE158, AE159, AE175, CE157, ME106, ME120, ME130A, ME130B, ME150, ME170; and a technical elective (1 design unit) (69 units).

### PROGRAM OF STUDY

The sample program of study chart shown is typical for the major in Aerospace Engineering. This program is based upon a rigid set of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their programs approved by their faculty advisor. Aerospace Engineering majors must consult at least once every year with the academic counselors in the Undergraduate Student Affairs Office and with their faculty advisor.

**Sample Program of Study — Aerospace Engineering**

FALL	WINTER	SPRING
<b>Freshman</b>		
Mathematics 2A	Mathematics 2B	Mathematics 2C
Chemistry 1A, 1LA	Chemistry 1B, 1LB	Physics 5B, 5LB
E10	Physics 5A	Breadth
	Breadth	Breadth
<b>Sophomore</b>		
Mathematics 2D	Mathematics 3A	Mathematics 3D
Physics 5C, 5LC	Physics 5D, 5LD	ECE72
ME30	ME80	ME91
Breadth	E54	Breadth
<b>Junior</b>		
AE140	ME106	CE157
ME130A	ME130B	ME120
Math/Engineering	ME150	AE146
Analysis Elective	ME170	Breadth
Breadth		
<b>Senior</b>		
AE108	AE112	Technical Elective
AE135	AE158	AE159
AE136	AE175	Breadth
Breadth	Breadth	

**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 154.

**Transfer Students.** Preference will be given to applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of calculus, one year of engineering physics (with laboratory), one year of general chemistry (with laboratory), one course in computational methods (FORTRAN, Pascal, C, or C++), and one year of approved lower-division writing. Courses in linear algebra, differential equations, dynamics, thermodynamics, statics, materials science, and electronics and power systems are required for junior academic standing, and it is recommended that these courses be completed prior to transferring to UCI. Dynamics, materials science, statics, and thermodynamics may be offered summer session at UCI. Students should work closely with the UCI Office of Admissions and Relations with Schools to ensure that they are enrolled in the appropriate courses.

For further information, contact the School of Engineering Undergraduate Student Affairs Office at (714) 824-4334.

**REQUIREMENTS FOR THE BACHELOR'S DEGREE IN MECHANICAL ENGINEERING**

Credit for at least 192 units including:

**University Requirements:** See pages 57-61.

**School Requirements:** See page 156.

**Departmental Requirements:**

**Mathematics Courses:** Mathematics 2A-B-C-D, 3A, and 3D (24 units).

**Basic Science Courses:** Chemistry 1A-B-C and 1LA-LB and Physics 5A-B-C and 5LB-LC (at least 28 units).

**Basic Engineering Courses:** Engineering E10, E54, ECE72, ME30, ME52, ME80, and ME91 (27 units).

**Mechanical Engineering Core Courses:** Engineering ME105, ME106, ME107, ME115, ME120, ME130A, ME130B, ME147, ME150, ME151A-B-C, ME151PA-PB-PC, and ME170 (54 units).

**Technical Electives:** 14 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 30 design units, at least 8 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 three courses selected from Engineering AE108, AE112, AE135, AE136, AE158, AE159, and AE175.

**Specialization in Combustion/Propulsion:** Completion of a Senior Design Project in this area and three courses selected from Engineering AE112, ME110, ME164, ME180, and ME185.

**Specialization in Environmental Engineering:** Completion of a Senior Design Project in this area and three courses selected from Engineering ME110, ME162, ME164, and ME199 (3 or 4 units), and one course selected from CE173, ChE160, Physical Sciences 201A, Physical Sciences 202, and Physical Sciences 210.

**Specialization in Heat Transfer/Fluid Mechanics:** Completion of a Senior Design Project in this area and three courses selected from Engineering AE135, ME121, ME180, and ME185.

**Specialization in Materials Science and Engineering:** Completion of a Senior Design Project in this area and three courses selected from Engineering ChE60, CBE153, CBE155A, CBE155B, ME117, ME156, 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 ME171, ME172, ME180, and ME185.

**PROGRAM OF STUDY**

The sample program of study chart shown is typical for the accredited major in Mechanical Engineering. Students should keep in mind that this program is based upon a rigid set of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Therefore, the course sequence should not be changed except for the most compelling reasons. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their programs approved by their faculty advisor. Mechanical Engineering majors must consult at least once every year with the academic counselors in the Undergraduate Student Affairs Office and with their faculty advisors.

**Sample Program of Study — Mechanical Engineering**

FALL	WINTER	SPRING
<b>Freshman</b>		
Mathematics 2A	Mathematics 2B	Mathematics 2C
Chemistry 1A, 1LA	Physics 5A	Physics 5B, 5LB
ME52	Chemistry 1B, 1LB	Chemistry 1C
Breadth	Breadth	Breadth
<b>Sophomore</b>		
Mathematics 2D	Mathematics 3A	Mathematics 3D
Physics 5C, 5LC	E54	ECE72
E10	ME80	ME91
ME30	Breadth	Breadth
<b>Junior</b>		
ME105	ME106	ME107
ME115	ME130B	ME120
ME130A	ME150	Technical Elective <sup>1</sup>
ME147	ME170	Breadth
<b>Senior</b>		
ME151A	ME151B	ME151C
ME151PA	ME151LB	ME151PC
Technical Elective <sup>1</sup>	Technical Elective <sup>1</sup>	Technical Elective <sup>1</sup>
Breadth	Breadth	Breadth
	Breadth	Breadth

Students must obtain approval for their program of study and must see their faculty advisor at least once each year.

<sup>1</sup> All technical elective courses must be approved by the faculty advisor and must comprise at least 10 of the total design credits required.

## Graduate Study in Mechanical and Aerospace Engineering

The Mechanical and Aerospace Engineering faculty have special interest and expertise in three thrust areas: systems and design, fluid and thermal sciences, and combustion and propulsion. Systems and design 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 multiphase heat transfer and fluid flow, convection, 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 three thrust areas as well as study in propulsion, aerodynamics, trajectory optimization and guidance, and control of flexible space structures.

Programs of study leading to the M.S. and Ph.D. degrees in Mechanical and Aerospace 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 complete a minimum of 20 units in graduate courses numbered ME200-289, and 16 units from unrestricted courses of which not more than eight units are in

ME296 and not more than five units are in other courses numbered ME291-299. The courses planned for study must be approved by a faculty advisor and the graduate advisor.

#### Plan II: Comprehensive Examination Option

The comprehensive examination option requires completion of 36 units of study, 24 units of which must be from graduate courses numbered ME200-289. With a faculty advisor approval, the remaining 12 units can include execution and documentation of a research or design project (which can count for up to seven of the 36 required units). The courses planned for study must be approved by a faculty advisor and by the graduate advisor.

### DOCTOR OF PHILOSOPHY DEGREE

The doctoral program in Mechanical and Aerospace Engineering is tailored to the individual needs and background of the student. The detailed program of study for each Ph.D. student is formulated in consultation with a faculty advisor who takes into consideration the objectives and preparation of the candidate.

Within this flexible framework the Department maintains specific guidelines that outline the milestones of a typical doctoral program. All doctoral students should consult the Departmental Ph.D. guidelines for program details, but there are several milestones to be passed: admission to the Ph.D. program by the faculty; completion of six non-research courses beyond M.S. degree requirements; passage of a preliminary examination or similar assessment of the student's background and potential for success in the doctoral program; course work; meeting departmental teaching requirements, which can be satisfied through service as a teaching assistant or equivalent; research preparation; formal advancement to candidacy through a qualifying examination conducted on behalf of the Irvine division of the Academic Senate; development of a research proposal; completion of a significant research investigation, and completion and defense of an acceptable dissertation. There is no foreign language requirement. The degree is granted upon the recommendation of the Doctoral Committee and the Dean of Graduate Studies. A program of part-time study is not available for the Ph.D. Doctoral programs must be completed in seven calendar years from the date of admission.

Before seeking admission, Ph.D. applicants are encouraged to communicate directly and in some detail with prospective faculty sponsors. The student's objectives and financial resources must coincide with a faculty sponsor's research interests and research support. Financial aid in the form of a teaching assistantship or fellowship may not cover the period of several years required to complete the program. During the balance of the period the student will be in close collaboration with the faculty research advisor.

## Courses in Aerospace Engineering

### UPPER-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.

**AE108 Aerospace Laboratory (4) F.** Analytical and experimental investigation in aerodynamics, fluid dynamics, and heat transfer. Emphasis on study of flow over objects and lift and drag on airfoils. Introduction to basic diagnostic techniques. Report writing is emphasized and a design project is required. Prerequisite: ME130B. (Design units: 2)

**AE112 Propulsion (4) W.** Application of thermodynamics and fluid mechanics to basic flame processes and cycle performance in propulsion systems: gas turbines, ramjets, scramjets, and rockets. Prerequisites: ME91, AE135. Formerly ME112. (Design units: 2)



**AE135 Compressible Flow (4) F.** Compressibility effects in fluid mechanics. One-dimensional flow with area variation, friction, heat transfer, and shocks. Design of gas supply systems. Two-dimensional flow with oblique shocks and isentropic waves. Supersonic airfoil theory and design, wind-tunnel design. Basic diagnostics. Prerequisites: ME91, ME130A, ME130B. Formerly ME135. (Design units: 2)

**AE136 Aerodynamics (4) F.** Analysis of flow over aircraft wings and airfoils, prediction of lift, moment and drag. Topics: fluid dynamics equations; flow similitude; viscous effects; vorticity, circulation, Kelvin's theorem, potential flow; superposition principle, Kutta-Joukowski theorem; thin airfoil theory; finite wing theory; compressibility. Prerequisites: ME130A and ME130B. Formerly ME136. (Design units: 2)

**AE140 Engineering Analysis (4) F.** Fourier analysis with applications to boundary value problems and filtering. Laplace transforms with applications to differential equations and linear systems. During the last two weeks, special emphasis is placed on an area taken from heat transfer, vibrating systems, control systems. Prerequisite: Mathematics 3D.

**AE146 Orbital Mechanics (4) S.** Basic rocket dynamics, payloads and staging; equations of motion for the N-body problem; orbits, orbit transfer, orbit determination; interplanetary flight and planetary fly-bys. Prerequisite: ME80. Formerly ME146. (Design units: 1)

**AE158 Aircraft Performance (4) W.** Fundamentals of flight theory applied to subsonic propeller and jet aircraft. Nature of aerodynamic forces, drag and lift of wing and fuselage, high-lift devices, level-flight performance, climb and glide performance, range, endurance, takeoff and landing distances, static and dynamic stability and control. Prerequisites: Engineering ME80, ME130A. (Design units: 2)

**AE159 Aircraft Design (4) S.** Preliminary design of subsonic general aviation and transport aircraft with emphasis on layout, aerodynamic design, propulsion, and performance. Estimation of total weight and weight distribution, design of wings, fuselage, and tail, selection and location of engines, prediction of overall performance. Prerequisites: Engineering ME130A, AE112, AE136, and AE158, or consent of instructor. (Design units: 4)

**AE175 Dynamics and Control of Aerospace Vehicles (4) W.** Equations of motion, linearization, stability derivatives, and longitudinal and lateral modes of motion. Handling qualities, sensors and actuators, and effects of various feedbacks on stability and performance. Autopilot design. Prerequisite: Engineering ME170. (Design units: 2)

## Courses in Mechanical 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.

**ME30 Applied Mechanics: Statics (4) F.** Applies the principles of static equilibrium of classical physics to the analysis of structures such as trusses and frames, and the determination of stresses in a beam. Corequisite or prerequisite: Mathematics 2D. Prerequisite: Physics 5A. ME30 and CE30 may not both be taken for credit. (Design units: 0)

**ME52 Computer-Aided Design (4) F.** Develops skills for interpretation and presentation of mechanical design drawings and the use of CAD in engineering design. An integrated approach to drafting based on sketching, manual drawing, and three-dimensional CAD techniques is presented. (Design units: 0.5)

**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)

**ME62 Introduction to Biomechanics (3) S.** A first course in biomechanics to introduce students to the field of human motion analysis. Lectures emphasize the application of fundamental mechanics to the human musculoskeletal system. Laboratory exercises include gait analysis, cardiovascular fitness, noninvasive electromyography, and computer animation. Prerequisites: Physics 3A or 5A, and Mathematics 2A-B. (Design units: 0)

**ME80 Engineering Dynamics (4) W.** Introduction to the kinetics and dynamics of particles and rigid bodies. The Newton-Euler, Work/Energy, and Impulse/Momentum methods are explored for ascertaining the dynamics of particles and rigid bodies. An engineering design problem using these fundamental principles is also undertaken. Prerequisite: ME30 or CE30. Only one course from ME80, CE80, and E80 may be taken for credit. (Design units: 0.5)

**ME91 Introduction to Thermodynamics (4) S.** Thermodynamic principles; open and closed systems representative of engineering problems. First and second law of thermodynamics with applications to engineering systems and design. Prerequisites: Physics 5B, Mathematics 2D. Only one course from ME91, E101, and CE91 may be taken for credit. (Design units: 0.5)

**ME99T Design and Orientation for Transfer Students (1 to 2) F.** Provides a design experience to transfer students in CAD, dynamics, and thermodynamics as well as an overview of the program. (Design units: 0.5-1.5)

### 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 with advanced engineering material. Prerequisite: E54. (Design units: 1)

**ME106 Mechanical Systems Laboratory (4) W.** Experiments in linear systems, including op-amp circuits, vibrations, and control systems. Introduction to digital sampling concepts. Emphasis on demonstrating that mathematical models are useful tools for analysis and design of electro-mechanical systems. Prerequisites: ME147 and ECE72. (Design units: 2)

**ME107 Fluid Thermal Science Laboratory (4) S.** Fluid and thermal engineering laboratory. Experimental analysis of fluid flow, heat transfer, and thermodynamic systems. Probability, statistics, and uncertainty analysis. Report writing stressed. Corequisite or prerequisite: ME120. Prerequisites: ME91 and ME130B. (Design units: 1)

**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: 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: 1)

**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 (4) 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: E54 and ME91. (Design units: 1)

**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, ME130B. (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) F.** 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 3D, and Engineering ME80. (Design units: 0)

**ME130B Introduction to Viscous and Compressible Flows (4) W.** Introduction to the analysis of viscous, incompressible, and one-dimensional compressible flows. Prerequisites: ME91, ME130A. (Design units: 1)

**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. Prerequisites: Engineering ME80, Mathematics 3D or Mathematics 2F. (Design units: 1)

**ME150 Mechanics of Materials (5) W.** Concepts of stress and strain. Analysis of deformable solids under axial, torsional, shearing, and bending loads. Two-dimensional analysis of stress and strain. Residual stresses, indeterminate beam analysis methods, buckling, impact loading, design of fundamental structure components. Corequisite or prerequisite: E54. Prerequisite: ME30. ME150 and CE150 may not both be taken for credit. (Design units: 1)

**ME151A Mechanical Engineering Design I (4) F.** Presents the principles of engineering design in the context of an industrial application. Local manufacturing firms define an engineering design project to be completed by students in 10 weeks. Projects include brainstorming to final design, with a formal report. Corequisite: ME151PA. Prerequisites: ME115, ME130B, ME150. (Design units: 4)

**ME151B Mechanical Engineering Design II (4) W.** A series of product-specific design models that illustrate the application of engineering analysis in the design process of a practical device. Modules include: heat transfer; mechanisms and static loads; dynamics and stress; and vibrations and control. Corequisite: ME151PB. Prerequisite: ME151A. (Design units: 3)

**ME151C Mechanical Engineering Design III (2) S.** Tracks the progress of the senior design projects which become case studies in ethics, safety, design, failure modes, new products, and patents. Concludes with a public presentation of the projects. Corequisite: ME151PC. Prerequisites: ME151A-B. (Design units: 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 (4) 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: ME120, ME150. (Design units: 2)

**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)

**ME156 Mechanical Behavior and Design Principles (4) S.** Elastic and plastic deformation (three-dimensional analysis). Stress-strain relationships. Yielding criteria. Necking. Buckling. Fracture. Fatigue. Impact. Design parameters and criteria. Use of library is stressed. Prerequisites: E54, ME150. (Design units: 2)

**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: Engineering ME130A or CE170A. (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: ME80; ME147 or AE140 or equivalent; and Mathematics 3D. (Design units: 2)

**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. Only one course from Engineering ME185, CE185, and Mathematics 105A may be taken for credit. (Design units: 2)

**ME188 Engineering Design in Industry (4) F, W, S.** Presents the principles of engineering design in the context of an industrial application. Local manufacturing firms define an engineering design project to be completed by students in 10 weeks. Projects include initial brainstorming to final design, with a formal result. (Design units: 4)

**ME198 Group Study (1 to 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) F.** Linear algebra, including vector spaces, matrices, linear system of equations, and the eigenvalue problem. Scalar and vector field theory. Calculus of variations and optimization. Notions of stability for linear and nonlinear differential equations. Prerequisite: Mathematics 3D.

**ME200B Engineering Analysis II (4) W.** Review of ordinary differential equations, including Bessel and Legendre functions. Partial differential equations, including the diffusion equation, Laplace's equation, and the wave equation. Fourier series, Fourier and Laplace transforms and their applications. Introductions to functions of a complex variable and conformal mapping. Prerequisite: Mathematics 3D.

**ME201 Computer-Aided Geometric Modeling (3) W.** Parametric representation of curves and surfaces. Boundary representation of solids, approximation techniques, constructive solid geometry. Prerequisite: ME200A. Formerly ME201A.

**ME202 Geometric Methods of Mechanics (3) S.** A mathematical treatment of mechanics, with applications to robotic and general multibody systems. Local and global methods of Riemannian geometry and lie theory. Symplectic geometry, Hamiltonian and Lagrangian systems, variational principles of mechanics. Applications to kinematics, dynamics, and control of multibody systems. Prerequisites: ME200A, ME200B.

**ME203 Numerical Methods in Engineering (3) S.** Simple difference schemes for model PDEs. Richardson's extrapolation. Error estimate. Interpolation theory. Approximation theory, least squares, minimax approximation, orthogonal polynomials. Trigonometric interpolation, FFT. Numerical quadrature. Solution of linear and nonlinear equations, stability and convergence. Concepts of finite volume, finite element, and spectral methods.

**ME204 Characterization of Dynamical Systems (3) F.** Introduction to the modern theory of dynamical systems. Ordinary differential equations and maps: invariant spaces and structural stability. Local bifurcations. The Smale horseshoe, fractal sets, symbolic dynamics, chaos. Global bifurcations. Applications and examples.

**ME205 Perturbation Methods in Engineering (3) S.** Asymptotic expansions of integrals. Regular and singular perturbations. Perturbation methods for ordinary and partial differential equations. Matched asymptotic expansions.

**ME206 Nonlinear Optimization Methods (3) S.** Numerical methods for constrained and unconstrained optimization. Barrier functions, quadratic programming, trust region algorithms. Use of orthogonal factorizations for numerical stability. Prerequisite: ME200A.

**ME210 Advanced Fundamentals of Combustion (3) W.** Premixed, non-premixed, 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 Statistical Thermodynamics (3) F.** 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: ME91 and ME200A.

**ME217 Generalized Thermodynamics (3) F every other year.** 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 posteriori success for the resulting theory. Prerequisites: ME91, ME115 or equivalent.

**ME220 Conduction Heat Transfer (3) F every other year.** 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.

**ME221 Convective Heat Transfer (3) S.** Laminar and turbulent heat transfer in external and internal flows. Similarity solutions. Integral methods. Free convection. Prerequisite: ME230B. Formerly ME221A, ME221B.

**ME222 Radiation Heat Transfer (3) F every other year.** 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 every other year.** 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 every other year.** 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 every other year.** 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 every other year.** 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.** 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 Inviscid Incompressible Fluid Mechanics (3) F.** Equations of motion. Vector notation. Flow kinematics. Potential flow and complex potential. Vorticity and circulation. Bernoulli's theorem. Crocco's theorem. Conformal, Joukowski, and Schwarz-Christoffel transformations. Prerequisite: ME130A. Formerly ME230B.

**ME230B Viscous Incompressible Fluid Dynamics (3) W.** Review of mass, momentum, energy equations. Stress tensor, constitutive relations. Exact solutions to laminar flows. Stokes and Oseen flows. Concept of self-similarity. Boundary layer theory: thin-layer approximation, Falkner-Skan, Blasius solutions, integral methods. Jet, wake, cavity flows. Introduction to turbulence: instability, Reynolds averaging, mixing length. Prerequisite: ME230A. Formerly ME230A.

**ME230C Compressible Fluid Dynamics (3) S.** One-dimensional unsteady flow: Riemann invariants, acoustics, shock tube. Two-dimensional flow: shock polars, linear theory, similarity rules, method of characteristics. Three-dimensional flow: slender-body theory. Effects of viscosity and conductivity: laminar boundary layer, Crocco-Busemann relations. Prerequisites: ME230A or ME230B.

**ME230D Theoretical Foundations of Fluid Mechanics (3) F.** Review of tensor and vector calculus. Well-posed problems and boundary, initial, and interface conditions; strong and weak solutions. Similarity, perturbation theory and limit behavior, bifurcations. Wave propagation. Vortices: mutual interactions and stability. Newtonian and non-Newtonian flows. Jets, wakes, and cavities. Prerequisites: ME230A, ME230B.

**ME231 Fundamentals of Turbulence (3) S.** 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 every other year.** Turbulent motion. Statistical and spectral methods. Homogeneous and shear flow problems. Turbulence in the atmosphere. Boundary layer, effects of buoyancy, rotation. Prerequisite: ME230A.

**ME233 Stability of Fluids (3) S every other year.** Stability of motion of an inviscid or Newtonian fluid. Instability of a shear layer. Onset of convection. Stability of plane parallel flows. Stability of drops, bubbles, and interfaces. Techniques include linear and nonlinear analysis. Prerequisites: ME200A, ME200B, ME230A, ME230B.

**ME236 Nonequilibrium Gas Dynamics (3) W every other year.** Molecular description of fluid flow. Boltzmann equation. Chapman-Enskog expansion for flows with translational nonequilibrium. Shock structure. Inviscid flows with chemical and vibrational nonequilibrium. Prerequisite: ME230C.

**ME241 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. Formerly ME247.

**ME242 Robotics (3) S.** Spatial rigid-body transformations. Forward and inverse kinematics. Screw coordinates and transformations. Rate and static analyses using screw theory. Reciprocal screw systems. Singularity analysis. Parallel manipulators. Hybrid serial/parallel manipulators. Manipulator dynamics. Compliance and force control. Trajectory generation. Prerequisites: ME80, ME241.

**ME243 Geometric Methods of Robotics (3) W.** A mathematical treatment of robotic mechanisms, manipulation, and motion control. Local and global methods of Riemannian geometry and Lie theory. Forward and inverse kinematics, workspace and dexterity, optimal kinematic design. Grasping, compliance, dynamics, and control. Motion planning and obstacle avoidance. Prerequisites: ME200A, ME247.

**ME244 Theoretical Kinematics (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. Formerly ME240.

**ME245 Spatial Mechanism Design (3) W.** Fundamental kinematic theory required for planar, spherical, and spatial mechanism design. Complex numbers, quaternions, and dual quaternions are used as geometric algebras for four-position synthesis in the plane, on the sphere, and in space, respectively. Prerequisites: ME200A, ME244.

**ME260 Current Issues Related to Tropospheric and Stratospheric Processes (4).** Examination of current issues related to the atmosphere, including energy usage; toxicology; effects on humans, forest, plants, and ecosystems; particulate matter (PM10); combustion; modeling, and meteorology; airborne toxic chemicals and risk assessment; application of science to development of public policies. Prerequisite: Chemistry 245 or Earth System Science 202, or Engineering ME164 or Engineering ME261 or consent of instructor. Same as Chemistry 241.

**ME261 Air Quality Modeling (3) W.** Fundamental principles necessary to understand the dynamics of air pollutants. Derivation and description of mathematical techniques for the numerical solution of the atmospheric equation. Formulation and development of air quality models. Prerequisites: ME230A and ME230B or consent of instructor; Engineering E10 or equivalent FORTRAN knowledge.

**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: ME170 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.

**ME274 Optimal Control (3) F.** Introduction to the principles and methods of optimal control. Topics include: objectives and issues in controlling nonlinear systems; linear variational and adjoint equations; optimality conditions via variational calculus, maximum principle, and dynamic programming; solution methods; applications to control of robots and aerospace vehicles.

**ME275 Nonlinear Feedback Systems (3).** Advanced tools for feedback control system analysis and synthesis. Norms, operators, Lp spaces, contraction mapping theorem, Lyapunov techniques along with their extensions. Circle criterion, positivity and passivity. Applications to nonlinear control methods, such as sliding mode or adaptive techniques. Prerequisite: ME270B.

**ME276 Geometric Nonlinear Control (3).** Using the mathematics of differential geometry, a number of the concepts and results of linear systems theory have been extended to nonlinear systems. Describes these extensions and illustrates their use in nonlinear system analysis and design. Prerequisites: ME200A, ME270A.

**ME279 Special Topics in Mechanical Systems (3).** Selected topics of current interest in mechanical systems. Topics include robotics, kinematics, control, dynamics, and geometric modeling. Prerequisites: ME241, ME270A. May be repeated for credit as topics vary.

**ME281 Fundamentals of Digital Signal Analysis (3).** Fundamentals and principles of digital data acquisition and analysis of random signals as encountered in turbulence, etc. Topics include analog-to-digital conversion, aliasing, statistical and spectral analysis of random signals using high-level computer routines and languages. Student project required. Prerequisites: ME200A, B. Formerly ME280.

**ME282 Fundamentals of Signal Transduction (3) S.** Fundamentals and principles of signal transduction including the analytical methods required for the successful measurement of both steady-state and time-varying quantities of engineering interest (e.g., fluid velocity, pressure, temperature) using both linear and non-linear systems. With laboratory. Prerequisite: ME281.

**ME283 Fundamentals of Computer Control of Experiments (3) S.** Fundamentals and principles of interfacing computers to experiments for data acquisition and control of the experiment. C programming, electronic data acquisition, interfacing to low-level and "black box" hardware, and case studies of computer-controlled experiments. student project required.

**ME284 Fundamentals of Experimental Design (3) S.** Fundamentals and principles of statistical experimental design and analysis. Emphasis addresses understanding and use of designed experiments, response surfaces, linear regression modeling, process optimization, and development of links between empirical and theoretical models.

**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.

# SCHOOL OF HUMANITIES

Michael P. Clark, **Dean (Acting)**

101 Humanities Trailer Complex  
Undergraduate Counseling: (714) 824-5132  
Graduate Counseling: (714) 824-4303  
World Wide Web: <http://www.humanities.uci.edu/>

The School of Humanities comprises the three fundamental areas of history, literature, and philosophy, and the intellectual activity of its departments and programs reflects both the discrete concerns of these three basic disciplines and their intersections. By studying and developing linguistic practices (foreign language training, rhetoric, and composition) and cultural knowledges (history, literature, and philosophy), humanists define the fundamental techniques of communication used by other components of the modern university and the larger society, as well as analyze and question those techniques and the cultural web of beliefs in which they are practiced. In its current configuration at UCI, the School of Humanities brings together its communications and critical functions, its traditional and postmodernist concepts to examine new areas of interest throughout the University and larger society. These interests might be called "critical literacy." The study of critical literacy investigates rhetorical techniques and contexts: innovative technologies of communication (the electronic media revolution) and the multicultural and global conditions of communication (cultural diversity within a democratic society and cultural differences in a transnational setting).

Because language is the humanist's essential tool and the medium of historical record, philosophical speculation, and literary creation and criticism, the School of Humanities places special emphasis on language and training in composition. The campuswide Writing Program is housed in the School of Humanities, as well as distinguished programs in creative writing.

The School of Humanities also offers programs in over a dozen foreign languages, both classical and modern, and requires that its majors take two years or the equivalent of foreign language study. The pursuit of critical literacy involves analyzing and understanding our immediate culture, and one way to do this is through the study of foreign languages and the cultural systems they entail. We rarely scrutinize or analyze something we know as intuitively as our native language, yet it is by means of this language that we organize and express our thoughts. The "foreignness" of a foreign language permits us to objectify an entire linguistic system, to observe its structure and its usage, and then to make comparisons with our own linguistic situation. The knowledge of one's *native* language, gained by this kind of comparative observation, is the foundation of critical reflection on texts of any nature—historical, philosophical, literary, political, legal, scientific, or other. Serious study of a foreign language is, therefore, crucial to any university education that aims at fostering critical thinking and objective self-reflection.

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 lower-division writing. Interdisciplinary studies are also an essential feature of the Humanities Honors Program, Film Studies, and Comparative Literature, and a number of the campus' Interdisciplinary Programs are affiliated with the School of Humanities. The School also maintains close ties with the School of Social Sciences' Department of Linguistics.

Because humanists deal analytically with the most complex problems and issues affecting people, and because they are especially adept at analyzing language and texts, students majoring in the humanities are particularly well-prepared for careers in all fields in

which analysis, judgment, and argument are important. Thus a background in the humanities is advantageous not only for a career in a university or school, but also for careers in such fields as management, law, medicine, communications, diplomacy, social work, and politics. In a changing world where the terms of employment and professional activity are no longer stable, it is crucial that students achieve not only knowledge, but also the skills of analysis and imagination that are fostered by humanistic inquiry and critical literacy.

## DEGREES

Art History*	B.A.
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.
East Asian Cultures	B.A.
East Asian Languages and Literatures	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.

\* In addition, a graduate concentration in Art History, leading to a Ph.D. in History, is offered by the Departments of Art History and History.

## 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. Other important factors are considered (see page 55).

## HUMANITIES INSTRUCTIONAL RESOURCE CENTER

The Humanities Instructional Resource Center (HIRC) provides comprehensive technology support for instruction, research, and faculty and staff development, and serves as the center of innovative technology-mediated instruction within the School of Humanities.

HIRC services and facilities include computer laboratories, video editing, video and audiotape libraries, fee-based laser printing, audio production, computing consultation, and technology-related research and development assistance for faculty, graduate, and undergraduate students.

The HIRC's Macintosh and AST laboratories provide a wide variety of instructional resources including, among others, multimedia applications and development stations, foreign language word processing and language learning materials, and logic simulations. Both laboratories are connected to a central server and to the campus backbone for access to the Internet, World Wide Web, Melvyl, and other research resources. The Macintosh laboratory consists of networked Centris 650 machines with CD-ROM drives. Both laboratories are available to Humanities students, instructors, and staff for class instruction and drop-in purposes.

Additional information may be obtained from the HIRC Computer Consultant's Office, 213 Humanities Hall, telephone (714) 824-8493, or the HIRC main offices, 269 Humanities Hall, telephone (714) 824-6344.

## Undergraduate Programs

In addition to 16 majors and 17 minors, the School also offers a formal concentration in Medieval Studies and courses in Italian and Portuguese.

The academic counselors in the Humanities Undergraduate Counseling Office, located in the Humanities Trailer Complex, help all students in planning a program of study. Transfer students in particular need to consult an academic counselor to determine major requirements. Students who expect to pursue graduate study also should consult with appropriate faculty members to ensure proper preparation.

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 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, by working as peer academic advisors in the Undergraduate Counseling Office, and by serving on the Humanities Council, which directly advises the Dean.

## HUMANITIES PEER MENTOR PROGRAM

The Humanities Peer Mentor Program is designed to address some of the academic, cultural, and social needs of minority students in the School of Humanities. The Program features two-tiered mentoring, with successful upper-division students mentoring small groups of new students, and the student mentors in turn working with faculty and staff. An undergraduate intern coordinates the activities. Another focus of the Program is to encourage and assist student mentors to go on to graduate school.

Participants attend workshops on topics such as study skills, library research, time management, and careers, as well as a variety of social events, and keep journals in which they express their ideas and raise issues for their mentors. Additional information is available from the Humanities Undergraduate Counseling Office; telephone (714) 824-5132.

## HUMANITIES HONORS PROGRAM

101 Humanities Trailer Complex; (714) 824-5132  
Lamar Hill, **Director**

The Honors Program of the School of Humanities is a two-year, upper-division program designed to challenge superior students from all fields by providing special opportunities for interdisciplinary work within an intellectually charged framework. Small seminars and the opportunity for independent research are some of the advantages offered by the Program, which is open by invitation to all UCI students regardless of their majors.

Students in the Program benefit from their involvement in the campus community of Humanities scholars. They enjoy a close relationship with the faculty and profit from intense interaction with their intellectual peers. A comprehensive advising program involving Honors faculty advisors as well as specially trained Honors peer advisors ensures that Humanities Honors students continually receive timely, individualized advice about their academic careers. Formal as well as informal gatherings, including student-organized social activities ranging from coffee hours to theater parties, augment a wide range of campus activities. Humanities Honors students have the opportunity to become some of the campus' best informed scholars on a broad range of topics: from artificial intelligence to medical ethics, from Shakespeare to Gilbert and Sullivan, from problems of the ancient Near East to the dilemmas of modernity.

Humanities Honors students complete a two-part course of study. In their junior year, students take three quarters of an interdisciplinary Proseminar (Humanities H120) organized about a single topic or problem, such as crime and punishment, the other, the development of religion in the West, the self, nature, or the American dream. The sequence is designed to compare and contrast modes of analysis and critical thinking in history, literary studies, and philosophy. In a small seminar setting, students are encouraged to become reflective about their own chosen disciplines.

In their senior year, students take a sequence beginning in the fall with a Senior Honors Seminar (Humanities H140), and continuing in the winter and spring with the Senior Honors Thesis (Humanities H141) and the Senior Honors Colloquium (H142), prepared as an independent research project under the direction of a faculty member on a topic chosen by the student. Students present their theses in an informal gathering with their faculty advisors in the spring, and a prize is awarded for the year's outstanding thesis.

In both sequences the Honors students benefit from their close association with exceptional scholars and the challenge and support of their intellectual peers.

Students interested in learning how the Humanities Honors Program will fit into their regular courses of study are encouraged to contact the Senior Academic Counselor in Humanities; telephone (714) 824-5132.

## CENTER FOR INTERNATIONAL EDUCATION

The Center for International Education, which includes the Education Abroad Program (EAP) and the International Opportunities Program (IOP), assists students in taking advantage of the many worldwide opportunities that exist for study, work, internship, volunteering, and research. School of Humanities majors and minors can benefit from a broader perspective of their fields by studying for one year at a university in such countries as China, France, Germany, Italy, Japan, Russia, Spain, or the United Kingdom through EAP. Students can also augment their exposure to other cultures with programs sponsored through IOP. See the Center for International Education section of the *Catalogue* or an academic counselor for additional information.

## REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57-61.

### 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.

**NOTE:** Within the beginning and intermediate foreign language instructional sequences (1A-B-C and 2A-B-C, and for Latin and Greek, 1A-B-C and 25), students must earn a grade of C or better in order to advance to the next level of instruction.

**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 and the Associate Dean, Undergraduate Study. Transfer students may not repeat foreign language courses for which they received credit upon matriculation to UCI.

**Native Speakers of Languages Other Than English.** A native speaker of a foreign language, defined by the University as someone who attended the equivalent of secondary school in another country where the language of instruction was other than English, may be exempted from taking third-year language study in that language for some majors offered by the School of Humanities. In this case, the student must *substitute* appropriate upper-division courses in the major to replace the number of exempted courses. For example, if a native speaker of French is exempted from French 100A and 100B, that student must replace those two courses with two other upper-division French courses offered by the Department of French and Italian.

**Repeating Deficient Foreign Language Grades.** First- and second-year foreign language courses and third-year foreign language composition courses are sequential and each is prerequisite to the next. This is true also of fourth-year Chinese, Japanese, and Russian. Students wishing to repeat a deficient grade in one of these courses must repeat it *prior* to continuing on to the next level of the language. A student may not take a lower-level course for credit once a more advanced level has been completed with a passing grade.

**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).

**Maximum Overlap Between Major and Minor Requirements:** Students completing majors and minors within the School of Humanities may count no more than two courses for both a major and a minor. No course may be counted for two minors.

**School Residence Requirement:** At least five upper-division courses required for each major must be completed successfully at UCI. Completion of a minor program is optional; however, for certification in a minor, at least four upper-division courses required for the minor must be completed successfully at UCI. See individual major and minor requirements for specific courses. Exceptions are considered on a case-by-case basis and decided in consultation with the appropriate department or faculty member.

**Off-campus Internship Policy.** In most cases, students are not allowed to earn credit for off-campus internships taken as Independent Study in the School of Humanities. However, when the student's department or program determines that the internship is academically appropriate to the student's program and promotes the student's academic goals, credit may be given.

A maximum of four units total may be earned for internships; however, the units may not be counted toward the student's major requirements. The sponsoring department or program and the instructor will in all cases require a substantial academic product, such as a paper, growing out of the internship.

A student who wishes to seek approval for an off-campus internship must file an Independent Study form with the Humanities Undergraduate Study Office prior to beginning the internship.

## 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 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 UCI Department of 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 ART HISTORY

246 Fine Arts; (714) 824-6635

Dickran Tashjian, **Department Chair**

### Faculty

George Bauer, Ph.D. Princeton University, *Professor of Art History* (Renaissance and Baroque)

Linda Freeman Bauer, Ph.D. Institute of Fine Arts, New York University, *Professor of Art History* (Renaissance and Baroque)

Anna Gonosová, Ph.D. Harvard University, *Associate Professor of Art History* (Byzantine and Medieval art)

James D. Herbert, Ph.D. Yale University, *Associate Professor of Art History and Film Studies* (modern European art, critical theory)

Judy C. Ho, Ph.D. Yale University, *Associate Professor of Art History* (Chinese art)

David Joselit, Ph.D. Harvard University, *Assistant Professor of Art History* (Modern and Contemporary art, critical theory, gender studies)

Philip Leider, M.A. University of Nebraska, *Senior Lecturer Emeritus in Art History*

Margaret M. Miles, Ph.D. Princeton University, *Associate Professor of Art History* (Greek and Roman art, archaeology)

Sally A. Stein, Ph.D. Yale University, *Associate Professor of Art History* (American art, history of photography, feminist theory)

Dickran Tashjian, Ph.D. Brown University, *Department Chair and Professor of Art History* (American art and literature, American and European avant-garde, art and technology)

Bert Winther, Ph.D. Institute of Fine Arts, New York University, *Assistant Professor of Art History* (Modern Japanese art, Asian American art, East/West discourses in modern visual culture)

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, philosophy, literature, and in other areas of the 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 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 57–61.

**School Requirements:** See page 190.

#### Departmental Requirements for the Major

Two quarters of Art History 40A, 40B, 40C and two quarters of Art History 42A, 42B, 42C; 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, 165 (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.

Students should register for Art History 190 as early as possible in their junior year after completing the University lower-division writing requirement.

**Residence Requirement for the Major:** At least five upper-division courses required for the major must be successfully completed at UCI.

#### Departmental Requirements for the Minor

One year-long introductory sequence (either Art History 40A, 40B, 40C or 42A, 42B, 42C), 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, 165 (Modern history), and 150–164 (Asian history); and one quarter of Art History 198.

**Residence Requirement for the Minor:** Four upper-division courses must be successfully completed at UCI.

### GRADUATE STUDY IN ART HISTORY

The Department of Art History offers a graduate concentration in Art History leading to the Ph.D. degree in History, in conjunction with the Department of History. The program and its courses are administered by the Department of Art History. Students in the program specialize in either Western Art History or Asian Art History and should indicate their area of interest on their graduate application. A graduate emphasis in Feminist Studies also is available. Refer to the Women's Studies section of the *Catalogue* for information.

### Admission

The program is open to students applying with either a bachelor's or a master's degree, and applicants must meet the general requirements for admission to graduate study at UCI. Although an M.A. degree in Art History is preferred, students who have an M.A. in another discipline or who do not have an M.A. also may apply for admission.

Students who have an M.A. degree must have earned a minimum grade point average of 3.0 from an accredited institution. A copy of the master's thesis or a major research paper written at the master's level, should be submitted with the application packet.

Students who do not have an M.A. degree should hold a B.A. degree or its equivalent from an accredited institution with a minimum grade point average of 3.5. A recent sample of academic writing, such as a representative undergraduate paper, should be submitted with the application packet.

The deadline for application is January 15, and the Department accepts applicants for fall quarter admission only. Additional information is available from the Director of Graduate Studies for the Department of Art History.

#### Requirements for Students Who Have an M.A. Degree

Students who have an M.A. degree are required to take at least two quarters of course work (24 units), including two graduate seminars (Art History 295) and Theory and Criticism in Art History (Art History 290). Students specializing in Asian Art may also be required to take Chinese Art Historical Methods (Art History 288). Students select their courses in consultation with their graduate advisor. Additional course work may be required for students who hold an M.A. degree in a field other than Art History.

Students specializing in Western Art must demonstrate a reading knowledge of two modern languages other than English and related to their field of study during the first quarter following admission. The specific languages are determined by the student's principal advisor in consultation with the departmental graduate advisor. Students of Asian Art must demonstrate a working knowledge of either Chinese or Japanese during the first quarter following admission. Students planning to specialize in Classical Art (within the Western Art specialization) are expected to have, or to acquire, a working knowledge of Greek or Latin.

#### Requirements for Students Who Do Not Have an M.A. Degree

Students who do not have an M.A. degree are required to take a minimum of 12 courses (48 units), eight of which must be at the graduate level and must include two graduate seminars (Art History 295), as well as Graduate Research and Methods in Western Art (Art History 286), and Theory and Criticism in Art History (Art History 290).

Students specializing in Western Art must take 10 courses distributed over at least three of the following areas, one of which must be in a related field outside Art History: Ancient—Near Eastern, Bronze Age, Classical Art; Western and Eastern Medieval Art; Northern and Southern Renaissance and Baroque; eighteenth- and nineteenth-century European and American art; twentieth-century European and American art; Chinese art, Japanese art; theory; related field outside Art History. Western Art students must demonstrate a reading knowledge of two modern languages other than English and related to their field of study; the specific languages are determined by the student's principal advisor in consultation with the departmental graduate advisor. Demonstration of reading knowledge of one foreign language is required during the first quarter following admission; knowledge of the second must be demonstrated by the end of the second year.

Students specializing in Asian Art must take Chinese Art Historical Methods (Art History 288) and nine courses from the following areas, one of which must be in a related field outside Art History: Chinese painting; Ancient Chinese art and archeology; Early Chinese Buddhist art; Japanese Buddhist art; Chinese/Japanese decorative arts and gardens; Japanese painting; one Western area; theory; related field outside Art History. Asian Art students must demonstrate a working knowledge of either Chinese or Japanese by the end of the first year. Students planning to specialize in Classical Art (within the Western Art specialization) are expected to have, or to acquire, a working knowledge of Greek or Latin.

Additional language requirements for specialists in either area may be determined by the student's principal advisor in consultation with the graduate advisor. All applicants may demonstrate reading knowledge by submitting a Graduate Students Foreign Language Test (GSFLT) score of 550 or better, or by passing the relevant departmental language examinations, or by providing the departmental graduate advisor with other evidence of competency.

### Qualifying Examination

Students who have an M.A. in Art History take the qualifying examination in their second year; all other students take it in their third year. The examination includes written and oral portions and covers the student's major and minor fields, which are determined in consultation with the student's advisor. A student is advanced to candidacy after passing the qualifying examination and completing the course work and language requirements.

### Dissertation

Upon advancement to candidacy and before beginning the dissertation, students submit a prospectus which defines the scope, approach, and rationale of the proposed dissertation. Students with an M.A. degree must submit their prospectus no later than two years after entering the program; other students must submit their prospectus no later than four years after entering the program. Additional course work may be required in preparation for writing the dissertation; this is determined by the advisory committee on the basis of the candidate's past academic performance, dissertation prospectus, and area of specialization. Students are awarded the Ph.D. upon successful completion and defense of the dissertation.

## 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.

**10A-B-C Issues in Contemporary Art and Visual Culture (4-4-4).** Contemporary art and cultural practice of the past 40 years; slide presentations and film/video screening. Recent history of visual art. Topics relating to those various critiques of the canon presented by multicultural studies, feminism, and gay and lesbian studies. Same as Studio Art 10A-B-C. Formerly Art History 35A-B-C. (IV)

**40A, 40B, 40C 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, 42B, 42C 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, 40B, 40C, or 42A, 42B, 42C are recommended 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 and Roman art are also taught. Concurrent with Art History 200.

**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 Medieval Art (4) F, W, S.** Specialized topics in Medieval art and architecture in Europe, the Mediterranean area, and the Near East between the fourth and fifteenth centuries. Examples: the art of the Migration Period, Medieval City. Concurrent with Art History 210.

**112 Studies in Early Christian and Byzantine Art (4) F, W, S.** Selected topics on the development of the art and architecture of the Later Roman and Byzantine Empires between ca. 300 and 1453. Examples: Early Christian architecture, Byzantine painting. Formerly Art History 110.

**114 Studies in Western Medieval Art (4) F, W, S.** Selected topics on the development of art and architecture in Western Europe between ca. 700 and 1400. Examples: Romanesque painting, Gothic architecture. Same as English and Comparative Literature CL 104, Humanities 110, or Women's Studies 170CD when topic is appropriate.

**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 Renaissance and Baroque Art (4) F, W, S.** Selected topics on the art and architecture of Europe between the fifteenth and eighteenth centuries. Example: Renaissance and Baroque prints. Concurrent with Art History 220.

**121 Studies in Southern Renaissance Art (4) F, W, S.** Selected topics determined by individual faculty members exploring historical developments and individual artists of the fifteenth and sixteenth centuries in Italy and Spain. Examples: the art of Venice, Renaissance architecture. Formerly Art History 120.

**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. Same as English and Comparative Literature CL 104 when topic is appropriate.

**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. Concurrent with Art History 230.

**133 Studies in Modern Art** (4) F, W, S. Varying topics within the period 1789 to 1940. Works of art are studied as cultural, social, and political practices. Same as Women's Studies 174CA, 174CB, 174CC, 174CD when topic is appropriate. Concurrent with Art History 233A, 233B, 233C, 233D.

**133A Topics in Modern Art** (4). Varies with each offering. Consult with instructor for specific topic.

**133B Realism and Impressionism: 1830–1880** (4)

**133C Symbolism through Cubism: 1880–1920** (4)

**133D Visual Culture between the Two World Wars: 1920–1940** (4)

**140 Studies in Contemporary Art** (4) F, W, S. Varying topics within the period 1940 to the present. Examples: Abstract Expressionism, Performance Art. Works of art are studied as cultural, social, and political practices. Same as Women's Studies 174D when topic is appropriate. Concurrent with Art History 240.

**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. Concurrent with Art History 250.

**152 Studies in 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.

**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 thirteenth centuries and the parallel developments in art theory.

**154 Studies in Later Chinese Painting** (4) F, W, S. New developments in Yuan, 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.

**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.

**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. Formerly Art History 160. Concurrent with Art History 265.

**175 Studies in Native and Tribal Art** (4) F, W, S. Varying topics on the art and culture of native and tribal societies. For example, North American Indians. Concurrent with Art History 275.

**180 Criticism of Art** (4) F, W, S. Selected topics discussed on the theoretical and/or practical dimensions of art historical criticism. Same as Women's Studies 174E when topic is appropriate. Concurrent with Art History 280.

**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. Concurrent with Art History 283.

**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 independent study courses may be repeated for credit.

**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: Art History major or consent of instructor.

**199 Independent Study in Art History** (1 to 4) F, W, S. Supervised, but independent reading or research on art historical topics. Prerequisite: consent of supervising instructor. May be taken for credit four times. Formerly Art History 196.

## GRADUATE

Topics within a given area may vary from quarter to quarter, and courses may be repeated for credit when this occurs.

**200 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 and Roman art are also taught. Concurrent with Art History 100.

**210 Studies in Medieval Art** (4) F, W, S. Specialized topics in Medieval art and architecture in Europe, the Mediterranean area, and the Near East between the fourth and fifteenth centuries. Examples: the art of the Migration Period, Medieval City. Concurrent with Art History 110.

**220 Studies in Renaissance and Baroque Art** (4) F, W, S. Selected topics on the art and architecture of Europe between the fifteenth and eighteenth centuries. Example: Renaissance and Baroque prints. Concurrent with Art History 120.

**230 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. Concurrent with Art History 130.

**233 Studies in Modern Art** F, W, S. Varying topics within the period 1789 to 1940. Works of art are studied as cultural, social, and political practices. Concurrent with Art History 133A, 133B, 133C, 133D.

**233A Topics in Modern Art** (4). Varies with each offering. Consult with instructor for specific topic.

**233B Realism and Impressionism, 1830–1880** (4)

**233C Symbolism through Cubism, 1880–1920** (4)

**233D Visual Culture between the Two World Wars, 1920–1940** (4)

**240 Studies in Contemporary Art** (4) F, W, S. Varying topics within the period 1940 to the present. Examples: Abstract Expressionism, Performance Art. Works of art are studied as cultural, social, and political practices. Concurrent with Art History 140.

**250 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. Concurrent with Art History 150.

**265 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. Formerly Art History 160. Concurrent with Art History 165.

**275 Studies in Native and Tribal Art** (4) F, W, S. Varying topics on the art and culture of native and tribal societies. For example, North American Indians. Concurrent with Art History 175.

**280 Criticism of Art** (4) F, W, S. Selected topics discussed on the theoretical and/or practical dimensions of art historical criticism. Concurrent with Art History 180.

**283 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. Concurrent with Art History 183.

**286 Graduate Research and Methods in Western Art** (4) F, W. Critical examination of the history of the discipline, with studies of various theoretical, critical, and methodological approaches to the visual arts from antiquity to the present.

**288 Chinese Art Historical Methods** (4) W, S. An introduction to current methods used in the study of Chinese art, and to the theoretical and critical issues encountered in traditional Chinese scholarship.

**290 Theory and Criticism in Art History** (4) F, W, S. Focused studies of recent theoretical and critical approaches to the visual arts and art history, concentrating on particular issues, authors, and methodologies within and across historical and cultural areas.

**295 Graduate Seminar** (4) F, W, S. May be repeated for credit as topics vary. Same as Classics 220 when topic is appropriate.

**296 Directed Reading** (4) F, W, S. Directed reading on a specific topic agreed upon by student and instructor. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

**298 Reading for the Comprehensive Examination (4) F, W, S.** Directed reading in preparation for the comprehensive examination. Satisfactory/Unsatisfactory only. Prerequisite: consent of instructor. May be repeated for credit.

**299 Dissertation Research (4 to 12) F, W, S.** Research and preparation of the dissertation. Satisfactory/Unsatisfactory only. Prerequisite: consent of instructor. May be repeated for credit.

**399 University Teaching (4) F, W, S.** Limited to teaching assistants. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

## DEPARTMENT OF CLASSICS

156 Humanities Hall; (714) 824-6735

Walter Donlan, **Department Chair**

### Faculty

Luci Berkowitz, Ph.D. The Ohio State University, *Research Professor of Classics* (pastoral poetry, literary criticism)

Theodore F. Brunner, Ph.D. Stanford University, *Research Professor of Classics and Director, Thesaurus Linguae Graecae* (computer application to Classical literature, Augustan literature)

Cynthia L. Claxton, Ph.D. The University of Washington, *Lecturer in Classics* (Greek prose, historiography)

Walter Donlan, Ph.D. Northwestern University, *Department Chair and Professor of Classics* (early Greek literature and social history)

Richard I. Frank, Ph.D. University of California, Berkeley, *Associate Professor of History and Classics* (Roman history, Classical tradition)

B.P. Reardon, D.U. Université de Nantes, *Professor Emeritus of Classics* (Late Greek literature, Greek novel)

Patrick Sinclair, Ph.D. Northwestern University, *Associate Professor of Classics* (Latin prose, lexicography)

Dana F. Sutton, Ph.D. University of Wisconsin, *Professor of Classics* (Greek and Latin drama, Greek poetry, Anglo-Latin literature)

## Undergraduate Program

The Department of Classics aims to provide the undergraduate student with a working knowledge of the origins and heritage of Greco-Roman civilization. The Department is committed to a twofold purpose: (1) disseminating interest in and knowledge of Classical Civilization through the teaching of Greek and Latin language and literature; and (2) helping students, through courses in Classical literature, history, civilization, mythology, and religion taught through English translations, to appreciate the 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 Department 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. Representatives are responsible for maintaining close liaison with their constituency, for representing the students' interest in curriculum and personnel matters, and for the evaluation of both the academic program and the academic staff.

Inquiries regarding language placement, prerequisites, planning a program of study, or other matters related to the Department's offerings should be directed to the Office of the Chair, 156 Humanities Hall, telephone (714) 824-6735.

### 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. Courses are 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 57-61.

**School Requirements:** See page 190.

### 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 successfully completed 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 upper-division Classics courses, one of which may be in a related field such as history, art history, or philosophy.

**Residence Requirement for the Minor:** Four upper-division courses must be 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 and Life Planning 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 and Life Planning Center section for additional information.

The Department of Classics encourages students to take advantage of educational opportunities abroad while making progress toward their UCI degree. Classics and Classical Civilization majors and minors can benefit from a broader perspective of the field by studying for one year at a university in France, Germany, Italy, Spain, or the United Kingdom through the Education Abroad Program. Students can also augment their exposure to Greek, Latin, and Classical civilizations by studying for a summer in Greece or Italy at programs sponsored by other UC campuses through the International Opportunities Program. See the Center for International Education section of the *Catalogue* or your academic counselor 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 graduate program is closely connected with the Thesaurus Linguae Graecae research project and the Consortium for Latin Lexicography (the electronic version of the Munich-based Thesaurus Linguae Latinae). These projects afford special opportunities for students interested in computing as a means for research and teaching.

The Department offers a Ph.D. program with specializations in Greek or Latin. Except for students with advanced standing, three years (nine quarters) of course work are required. Normal course requirements are four quarters of the core courses, Classics 200A-B-C and 201; nine quarters of Classics 220; and five quarters of Classics 205. (Classics 280 may be substituted for these courses at the discretion of the Department.) Students are encouraged to take courses and seminars in relevant areas outside the Department. Students must demonstrate reading proficiency in German by the end of the second year and in another modern language (usually French or Italian) by the end of the third year. In order to become a candidate for the Ph.D. and enter the dissertation stage, a student must pass an individually designed set of qualifying examinations consisting of translation examinations in Greek and Latin, written examinations or lengthy papers in special authors and fields, and an oral examination. The normative time for the completion of the Ph.D. is six years.

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 are two years (six quarters) of course work, passage of a special set of examinations, and completion of a paper. The normative time for completion of the M.A. degree is two years. Course work for the M.A. degree normally consists of four quarters of Classics 200A-B-C and 201; four quarters of Classics 220; and five quarters of Classics 205. (Classics 280 may be substituted for these courses at the discretion of the Department.) A reading knowledge of German, demonstrated by examination or other means, is a requirement for the M.A. degree. 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.

The program puts emphasis on the tradition, methods, and tools of Classical scholarship, with special attention to computer application to scholarly research. Students are required to read extensively in the general field of Classics and ancient history, under faculty guidance. Experience in supervised teaching and/or research activity normally is required.

The resources of the program are enhanced through a cooperative teaching arrangement among the Classics graduate programs of the UC campuses at Irvine, Los Angeles, Riverside, San Diego, and Santa Barbara, and the University of Southern California. The program has entered into a special arrangement with faculty in Classics and related disciplines at UC Riverside and UC San Diego, with the future purpose of forming a three-campus joint-degree program in Classics.

### Thesaurus Linguae Graecae

The Thesaurus Linguae Graecae, a unique resource for research in Greek literary and linguistic studies, is closely affiliated with the Department of Classics although it is administratively separate. See page 12.

## 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 1A-B-C and Greek S1AB-BC may not both be taken for credit.

**Greek S1AB-BC Fundamentals of Greek (7.5-7.5) Summer.** First-year Greek in an intensified form. Same as Greek 1A-B-C during academic year. Will be offered if enrollment warrants; those interested should contact the Department. Prerequisite for S1AB: none; for S1BC: S1AB or 1B, or two years of high school Greek. Greek S1AB-BC and Greek 1A-B-C may not both be taken for credit. Formerly Greek 20A-B-C.

**Greek 25 Grammar Review and Survey of Greek Literature (4) 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 three years or more of the language at the high school level. (VI)

**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.

**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.

**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 1A-B-C and Latin S1AB-BC may not both be taken for credit.

**Latin S1AB-BC Fundamentals of Latin (7.5-7.5) Summer.** First-year Latin in an intensified form. Same as Latin 1A-B-C during academic year. Will be offered if enrollment warrants; those interested should contact the Department. Prerequisite for S1AB: none; for S1BC: S1AB or 1B, or two years of high school Latin. Latin S1AB-BC and Latin 1A-B-C may not both be taken for credit. Formerly Latin 20A-B-C.

**Latin 25 Grammar Review and Survey of Latin Literature (4) 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 three years or more of the language at the high school level. (VI)

**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.

**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.

**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 Classics

### LOWER-DIVISION

**Classics 5 Building English Vocabulary through Greek and Latin Roots (4).** Formation and use of English words from Greek and Latin derivatives. Particularly useful for first-year students who wish to augment their vocabulary systematically.

**Classics 10 Scientific and Specialized Terminology (4).** A study of English terms derived from Greek and Latin and important to contemporary medicine, science, and other professions, with emphasis on development of word-building skills. No prior knowledge of Greek or Latin required. For undergraduates, particularly those in the sciences, interested in development of their technical vocabulary.

**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 and provides them with basic understanding of the principles and procedures inherent in computer application to literary texts. Prerequisite: one year of ancient Greek, or consent of instructor.

**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 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 Women's Studies CL170 when topic is appropriate.

**Classics 175 Multicultural Studies and the Classics (4).** Treats the literature and culture of one or more minority groups in California and the United States in relation to Classical literatures. May be repeated for credit as topics vary. (VII-A)

**Classics 176 International Studies and the Classics (4).** Develops a broader understanding of the formation of different cultures and countries of Classical times and their impact on the modern world. May be repeated for credit as topics vary. (VII-B)

**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.

### COURSES IN JUDAIC STUDIES

**Classics 180A-B-C Judaic Studies (4-4-4).** Jewish culture, history, and philosophy. Topics vary. May be repeated for credit provided topic varies.

**Classics 181 Christian-Jewish Relations (4)**

**Classics 182A-B-C The Epic of the Jews (4-4-4).** 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.

### GRADUATE

**Classics 200A Contemporary Literary Theory and the Classics (4).** An introduction to contemporary literary theory focusing on important critical approaches; topics vary from year to year. May be repeated for credit as topics vary.

**Classics 200B Diachronic Perspectives on Classical Antiquity (4).** Examines ways in which Classical texts and ideas have been received and appropriated for the diverse purposes of ancient and subsequent cultures. May be repeated for credit as topics vary.

**Classics 200C Greece and Rome in Their Contemporary Cultural Contexts (4).** An introduction to the methods and perspectives of social scientific theory which can be used to study the material and social dimensions of the ancient cultures of Greece and Rome. May be repeated for credit as topics vary.

**Classics 201 Computing in Classical Studies (4).** An introduction to the latest methods of computing for research and teaching. May be repeated for credit as topics vary.

**Classics 205 Concurrent Reading (2).** Concurrent enrollment with advanced undergraduate courses (either Greek 105 or Latin 105) with enhanced reading and separate examinations. May be repeated for credit as topics vary.

**Classics 220 Classics Graduate Seminar (4).** Subject matter variable; mainly but not exclusively major literary topics. May be repeated for credit as topics vary. Same as Art History 295 when topic is appropriate.

**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

440 Humanities Office Building; (714) 824-2227

Steven D. Carter, **Department Chair**

### Faculty

Steven D. Carter, Ph.D. University of California, Berkeley, *Department Chair and Professor of East Asian Languages and Literatures* (medieval Japanese poetry and intellectual history)

Chungmoo Choi, Ph.D. Indiana University, *Associate Professor of Korean Culture* (modern Korea, post-colonial and colonial discourse, popular culture, anthropology)

Edward Fowler, Ph.D. University of California, Berkeley, *Associate Professor of Japanese* (modern Japanese literature, cultural studies, film)

James Fujii, Ph.D. University of Chicago, *Associate Professor of Japanese* (modern Japanese literature; critical theory and cultural studies)

Michael A. Fuller, Ph.D. Yale University, *Associate Professor of Chinese* (Chinese poetry and poetics, the cultural and intellectual contexts for poetry, aesthetic theory, linguistic issues in classical Chinese)

Hu Ying, Ph.D. Princeton University, *Assistant Professor of Chinese* (narrative literature, translation theory, feminist theory)

Martin W. Huang, Ph.D. Washington University, *Assistant Professor of Chinese* (narrative theories and traditional Chinese fiction)

Susan B. Klein, Ph.D. Cornell University, *Assistant Professor of Japanese* (premodern and modern theater and dance; Japanese religions; feminist critical theory)

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 an East Asian language and of literary texts in translation and in the original language. Students take a total of four years of courses in the modern language, in which comprehension, speaking, reading, and writing are stressed. Studies of texts take place throughout the curriculum: the first three years students read texts in translation and the fourth year they read in the original language.

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.

### CAREERS FOR THE MAJOR

Studies in East Asian languages and literatures 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 an East Asian language are also a valuable preparation for those students intent upon pursuing graduate study in any field of East Asian language or culture.

The Career and Life Planning 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 and Life Planning Center section for additional information.



## Undergraduate Program

The Department offers three undergraduate majors: the B.A. degree program in Chinese Language and Literature, the B.A. degree program in Japanese Language and Literature, and the B.A. degree program in East Asian Cultures. In addition, minors are offered in Chinese Language and Literature and Japanese Language and Literature.

### PLANNING A PROGRAM OF STUDY

The student and the faculty advisor (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, Japanese, and Korean courses according to their years of previous study. In general, one year of high school language 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 levels 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, Japanese, or Korean 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 courses to be selected in consultation with their advisor.

The faculty encourages students to study abroad, 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 57-61.

**School Requirements:** See page 190.

#### Departmental Requirements for the Majors

Three separate majors: Chinese Language and Literature, Japanese Language and Literature, and East Asian Cultures.

**Chinese Language and Literature:** Completion of Chinese 3C or equivalent; Chinese 100A-B-C, 101A-B-C; East Asian Languages and Literatures 190; one course dealing with the literature or culture of another East Asian country; and at least four additional courses in Chinese literature, history, art history, linguistics, or comparative literature, of which one may be a lower-division East Asian course offered by the Department.

**Japanese Language and Literature:** Completion of Japanese 2C or equivalent; Japanese 3A-B-C, 100A-B, 101A-B-C; East Asian Languages and Literatures 190; one course dealing with the literature or culture of another East Asian country; and at least five additional courses in Japanese literature, history, art history, linguistics, or comparative literature, of which one may be a lower-division East Asian course offered by the Department.

**East Asian Cultures:** Completion of Chinese 3C, Japanese 3C, or East Asian Languages and Literatures (Korean) 3C; two quarters of East Asian Languages and Literatures 155, with different topics; East Asian Languages and Literatures 190; and nine additional upper-division courses, at least three of which must pertain to a country other than the one of language specialization; up to four of these courses may be taken outside the Department, with the approval of the undergraduate advisor.

**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.

## Graduate Program

The Department offers a program of graduate study leading to the Ph.D. degree in East Asian Languages and Literatures, with concentrations in Chinese, Japanese, and East Asian Cultural Studies. The M.A. degree may be awarded to Ph.D. students in progress toward the doctoral degree. A graduate emphasis in Feminist Studies also is available. Refer to the Women's Studies section of the *Catalogue* for information.

The graduate program emphasizes rigorous training in language and textual analysis, with equal attention given to the historical, social, and cultural dimensions of literary study. In addition to more traditional vocabularies of criticism and theory, the curriculum encourages exploration of recent challenges to established conceptual and methodological frameworks. The program builds on the foundation of a faculty whose research interests engage major issues in Chinese, Japanese, and Korean literature and culture, while developing connections with the larger community of scholarship at UCI. An emphasis in Critical Theory is available to graduate students in all departments of the School of Humanities.

Because the graduate program is designed to prepare students for both college-level teaching and advanced research, each student will be required to serve, under direct faculty supervision, as a teaching assistant in an appropriate undergraduate course offered through the Department. As noted below, one quarter's worth of this teaching may be counted as part of the required course work toward completion of the degree.

Assuming that a student is enrolled full-time and enters the program with no major deficiencies in background or training, normal time needed to complete the Ph.D. degree is six years from matriculation. For students admitted with an M.A. degree or its equivalent from another institution, certain course requirements may be waived upon the approval of a faculty advisory committee, with a consequent reduction in normative time for completion of the Ph.D.

### MASTER OF ARTS IN EAST ASIAN LANGUAGES AND LITERATURES

Students are not admitted to an M.A.-only degree program but may be granted an M.A. in recognition of progress toward the Ph.D., normally after six quarters of course work and submission of two approved seminar papers, which will serve as the M.A. examination.

## DOCTOR OF PHILOSOPHY IN EAST ASIAN LANGUAGES AND LITERATURES

### Requirements for Admission

In addition to meeting the general requirements for admission to graduate study at UCI, specified by the Office of Graduate Studies, all students must present the following for review by an admissions committee composed of members of the faculty in East Asian Languages and Literatures: records of prior scholastic performance, including all college transcripts; three letters of recommendation; samples of written work; and aptitude scores from the Graduate Record Examination. Although the Department does not require entering students to have received an undergraduate degree comparable to its own, it recommends as much preparation in an East Asian language as possible. It also welcomes applications from students whose language training may not be as extensive but who have shown promise in the study of related disciplines. The study of appropriate European languages is encouraged as well.

### General Requirements

Upon admission to the program, the student is assigned a graduate advisor, in consultation with whom an advisory committee consisting of two additional faculty members is constituted. The student, and committee plan a program of study consisting of 15 graduate courses.

Before advancement to candidacy (normally after three years of graduate study), the student must have: (1) completed required course work as detailed below; (2) prepared one paper of publishable quality; (3) completed language requirements as listed below; (4) prepared five research reports on current scholarly articles to be decided upon in consultation with the faculty advisor; and (5) passed the qualifying examinations on four topics to be selected in consultation with the faculty advisory committee no more than two quarters before the examinations are to be taken. At least one of the topics should be related directly to the student's projected area of specialization in dissertation research.

Students who complete the qualifying examinations successfully are advanced to candidacy for the Ph.D. degree. They then write their doctoral dissertation on a topic developed in consultation with the faculty advisory committee. Some period of study abroad, for enhancement of language proficiency and/or dissertation research, is strongly encouraged.

### Concentration in Chinese

**Course Work.** Each student is required to complete: three courses from Chinese 201–204; Chinese 211A-B or 212A-B; Chinese 213A-B; Chinese 214; and seven additional courses (of which one may be in the graduate teaching program) as determined upon consultation with faculty advisors. At least three of these additional courses must be taken outside the Department on a relevant topic in literary or cultural theory. Courses taken to fulfill language requirements may not be counted toward the course work requirement.

**Language Requirements.** Before advancement to candidacy, all students must have completed four years of modern Chinese, two years of classical Chinese, and three years of modern Japanese, and have demonstrated reading proficiency in another appropriate language. Much of this work may, of course, have been completed prior to admission. In addition, the requirement for a second year of classical Chinese may be fulfilled by taking three reading courses in classical literature.

### Concentration in Japanese

**Course Work.** Each student is required to complete: three courses from Japanese 201–204; Japanese 211A-B or 212A-B; Japanese 213A-B; Japanese 214; and seven additional courses (of which one may be in the graduate teaching program) as determined upon consultation with faculty advisors. At least three of these additional

courses must be taken outside the Department on relevant topics in literary or cultural theory. Courses taken to fulfill language requirements may not be counted toward the course work requirement.

**Language Requirements.** Before advancement to candidacy, all students must have completed four years of modern Japanese and one year of classical Japanese, and have demonstrated reading proficiency in another appropriate language. In addition, students emphasizing classical Japanese are required to take one year of classical Chinese. Much of this work may, of course, have been completed prior to admission.

### Concentration in East Asian Cultural Studies

**Course Work.** Each student is required to complete: four Theory and Cultural Studies graduate courses; four graduate courses in Chinese, Japanese, or Korean; and seven additional courses (of which one may be in the graduate teaching program) as determined upon consultation with faculty advisors. At least three of these additional courses must be taken outside the Department on relevant topics. Courses taken to fulfill language requirements may not be counted toward the course work requirement.

**Other Requirements.** Before advancement to candidacy, all students must have completed examinations in four areas as determined upon consultation with faculty advisors. These areas will vary according to the interests of the student; examples might be Colonial and Postcolonial Theories; Modernity and East Asia; Critique of Asian Studies as a Field; Gender, Class and East Asia; Visual Culture and Japan; and Theorizing Minority Status in East Asia. All students must have completed four years of Chinese, Japanese, or Korean, or the equivalent. Three years or the equivalent in a second East Asian Language is recommended. Much of this work may, of course, have been completed prior to admission.

## Courses in Chinese

### UNDERGRADUATE

**1A-B-C Fundamental Mandarin Chinese (5-5-5) F, W, S.** Natural approach with emphasis on the four fundamental skills of listening, speaking, reading, and writing. Conducted in Mandarin Chinese using the Pinyin system of Romanization. Chinese 1A-B-C and Chinese S1AB-BC may not both be taken for credit.

**S1AB-BC Fundamentals of Mandarin Chinese (7.5-7.5) Summer.** First-year Mandarin Chinese in an intensified form. Same as Chinese 1A-B-C during academic year. Prerequisite for S1AB: none; for S1BC: Chinese S1AB or 1B, or two years of high school Chinese. Chinese S1AB-BC and Chinese 1A-B-C may not both be taken for credit.

**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. (2A: VI)

**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, Japanese 3C, East Asian 3C, or the 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)

**115 Chinese Literature: Advanced Texts (4).** A reading course designed for students with near-fluency in reading Chinese. Readings may include both literary and philosophical work by important writers, but the emphasis will be on literary texts and writings that interpret those texts. Prerequisite: Chinese 101C or consent of instructor. May be taken for credit three times as topic varies. (VII-B)

**180 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. Formerly Chinese 198. (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.

## GRADUATE

**201 Readings in Traditional Chinese Narrative and Prose (4).** Close reading of selected premodern prose texts such as historical narratives, novels, short stories, and essays. Prerequisite: Chinese 101C or equivalent. May be repeated for credit as topics vary.

**202 Readings in Traditional Chinese Poetry (4).** Close readings of selected premodern poetic texts. Prerequisite: Chinese 100C or equivalent. May be repeated for credit as topics vary.

**203 Readings in Modern Chinese Literature (4).** Close readings of selected modern literary texts. Prerequisite: Chinese 101C or equivalent. May be repeated for credit as topics vary.

**204 Readings in Chinese Literary and Cultural Theory (4).** Close readings of selected texts in premodern criticism and theory. Prerequisite: Chinese 100C or equivalent. May be repeated for credit as topics vary.

**211A-B Studies in Traditional Chinese Narrative and Prose (4-4).** Seminar, with topics varying from year to year. Research paper required. Prerequisite: Chinese 100C or equivalent. May be repeated for credit as topics vary.

**212A-B Studies in Traditional Chinese Poetry (4-4).** Seminar, with topics varying from year to year. Research paper required. Prerequisite: Chinese 100C or equivalent. May be repeated for credit as topics vary.

**213A-B Studies in Modern Chinese Literature (4-4).** Seminar, with topics varying from year to year. Research paper required. Prerequisite: Chinese 101C or equivalent. May be repeated for credit as topics vary.

**214 Studies in Chinese Literature and Cultural Theory (4).** Seminar, with topics varying from year to year. Research paper required. Prerequisite: Chinese 100C and/or Chinese 101C, as specified. May be repeated for credit as topics vary.

**230 Topics in Chinese Literature and Culture (4).** Seminar, with topics varying from year to year. Research paper required. Prerequisite: Chinese 101 or equivalent. May be repeated for credit as topics vary.

**290 Independent Study (4).** Directed research on topic determined in consultation with faculty member. A term paper or project is required. May be repeated for credit.

**299 Dissertation Research (4 to 12).** For students who have been admitted to doctoral candidacy. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

## Courses in Japanese

### UNDERGRADUATE

**1A-B-C Fundamental Japanese (5-5-5) F, W, S.** Natural approach with emphasis on the four fundamental skills of listening, speaking, reading, and writing all three Katakana, Hiragana, and Kanji scripts. Conducted in Japanese. Japanese 1A-B-C and Japanese S1AB-BC may not both be taken for credit.

**S1AB-BC Fundamentals of Japanese (7.5-7.5) Summer.** First year Japanese in an intensified form. Same as Japanese 1A-B-C during academic year. Prerequisite for S1AB: none; for S1BC: Japanese S1AB or 1B, or two years of high school Japanese. Japanese S1AB-BC and Japanese 1A-B-C may not both be taken for credit.

**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 1C or equivalent. Japanese 2A-B-C and Japanese S2AB-BC may not both be taken for credit. (2A: VI)

**S2AB-BC Intermediate Japanese (7.5-7.5) Summer.** Second-year Japanese in an intensified form. Same as Japanese 2A-B-C during academic year. Prerequisite for S2AB: Japanese 1C or three years of high school Japanese; for S2BC: Japanese S2AB or 2B, or five years of high school Japanese. Japanese S2AB-BC and Japanese 2A-B-C may not both be taken for credit. (S2AB: VI)

**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 a variety of texts. Prerequisite: Japanese 3C or equivalent. (VII-B)

**115 Japanese Literature: Advanced Texts (4).** A reading course designed for students with near-fluency in written Japanese. Texts will include both fiction and non-fiction by important writers, and may be supplemented and contextualized where needed by literary criticism and cultural-studies texts in English. Prerequisite: Japanese 101C or consent of instructor. May be taken for credit three times as topic varies. (VII-B)

**180 Topics in Japanese Literature (4).** Special topics through directed reading in Japanese. Paper required. Prerequisite: consent of instructor. May be taken for credit three times as topic varies. Formerly Japanese 198. (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.

## GRADUATE

**201 Readings in Traditional Japanese Prose (4).** Close reading of selected premodern prose texts, including tales, journals, travel journals, essays. Prerequisite: Japanese 100B or equivalent. May be repeated for credit as topics vary.

**202 Readings in Traditional Japanese Poetry or Drama (4).** Close reading of selected premodern poetic or dramatic texts. Prerequisite: Japanese 100B or equivalent. May be repeated for credit as topics vary.

**203 Readings in Modern Japanese Literature (4).** Texts include both fiction and nonfiction by important writers, and may be supplemented where needed by literary criticism and cultural-studies texts in English. Prerequisite: Japanese 101C or equivalent, or consent of instructor. May be repeated for credit as topics vary.

**204 Readings in Traditional Japanese Literary and Cultural Theory (4).** Close reading of selected texts involving literary criticism and/or aesthetics. Prerequisite: Japanese 100B or equivalent. May be repeated for credit as topics vary.

**211A-B Studies in Traditional Japanese Prose (4-4).** Seminar, with topics varying from year to year. Research paper required. Prerequisite: Japanese 100B or equivalent. May be repeated for credit as topics vary.

**212A-B Studies in Traditional Japanese Poetry or Drama (4-4).** Seminar, with topics varying from year to year. Research paper required. Prerequisite: Japanese 100B or equivalent. May be repeated for credit as topics vary.

**213A-B Studies in Modern Japanese Literature (4-4).** A two-quarter, in-depth look at a major author and/or issue in modern Japanese literature. Seminar format. The first quarter is devoted to reading of the requisite texts; the second quarter, to the writing of a research paper. Prerequisite: Japanese 203 or consent of instructor. May be repeated for credit as topics vary.

**214 Studies in Japanese Literary and Cultural Theory (4).** Seminar, with topics varying from year to year. Research paper required. Prerequisite: Japanese 100B or equivalent. May be repeated for credit as topics vary.

**230 Topics in Japanese Literature and Culture (4).** A topical study that addresses important issues in Japanese literature and culture. May focus on a specific writer or writers, or on a specific issue or set of related issues. Prerequisite: Japanese 203 or consent of instructor. May be repeated for credit as topics vary.

**290 Independent Study (4).** Directed research on topic determined in consultation with faculty member. A term paper or project is required. May be repeated for credit.

**299 Dissertation Research (4 to 12).** For students who have been admitted to doctoral candidacy. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

**398 Pedagogy for Teaching Japanese (4).** Lecture and training on how to teach Japanese. Provides theoretical knowledge and practical skills necessary for teaching the language. Prerequisite: Japanese 101C or consent of instructor.

## Courses in East Asian Languages and Literatures

### UNDERGRADUATE

**1A-B-C Fundamental Korean (5-5-5) F, W, S.** Natural approach with emphasis on the four fundamental skills of listening, speaking, reading, and writing. Conducted in Korean. East Asian S1AB-BC and East Asian 1A-B-C may not both be taken for credit.

**S1AB-BC Fundamental Korean (7.5-7.5) Summer.** First-year Korean in an intensified form. Same as East Asian 1A-B-C during academic year. Prerequisite for S1AB: none; for S1BC: S1AB or East Asian 1B, or two years of high school Korean. East Asian S1AB-BC and East Asian 1A-B-C may not both be taken for credit.

**2A-B-C Intermediate Korean (5-5-5) F, W, S.** Designed to develop writing and reading skills as well as communicative skills in authentic situations. Students also introduced to aspects of Korean culture as related to lesson topics. Prerequisites: East Asian 1C or equivalent; consent of instructor. (2A: VI)

**3A-B-C Advanced Korean (4-4-4) F, W, S.** Focuses on developing advanced reading, writing, and translation skills with additional instruction in Chinese characters. Prerequisites: East Asian 2C or equivalent; consent of instructor. (VII-B)

**55 Introduction to East Asian Cultures (4).** Interdisciplinary courses organized each year around a broad theme designed to introduce students to the cultures of East Asia. Topical organization of courses addresses issues that have been of importance historically and are reshaping East Asia today. May be taken three times for credit as topics vary. Formerly East Asian 50A, B, C and 60A, B, C. (IV, VII-B)

**110 Topics in Chinese Literature and Society (4).** Studies in Chinese texts in their social and cultural context(s). Conducted in English. May be taken for credit three times as topic varies. Same as Women's Studies 170EC when topics are 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 10 or 20, or consent of instructor. Same as Linguistics 165A. Concurrent with Linguistics 265A.

**117 Topics in Asian Philosophy (4).** Selected topics in the philosophies of Asia, e.g., Yoga, Buddhism, Vedanta, Confucianism, Taoism, and Shinto. Same as Philosophy 117A. May be repeated for credit as topics vary. (VII-B)

**120 Topics in Japanese Literature and Society (4) F.** Studies in Japanese texts in their social and cultural context(s). Conducted in English. May be taken for credit three times as topic varies. Same as Women's Studies 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 10 or 20. Same as Linguistics 165B. Concurrent with Linguistics 265B.

**130 Korean Society and Culture (4).** Introductory background to the social and cultural forces that affect the lives of the Koreans, including those in the United States. Considers traditional values and contemporary issues within a historical framework. Same as Anthropology 163K and Sociology 175A. (VII-B)

**133 Linguistic Structure of Korean (4).** Introduction to essential grammatical aspects of the Korean language. Comparisons to other languages. Prerequisite: East Asian 2C or consent of instructor. Same as Linguistics 165C.

**150 Topics in East Asian Literature in Translation (4).** East Asian literary works in translation. Taught in English. May be taken for credit three times as topic varies. Same as Comparative Literature 103 when topic is appropriate. (VII-B)

**155 Cultural Studies in East Asia (4).** Interdisciplinary and theoretical introduction to issues in cultural studies that are pertinent to the study of East Asia. All readings in English. May be taken for credit three times as topics vary. (VII-B)

**160 East Asian Cinema (4).** Study of Chinese or Japanese cinema from historical, theoretical, and comparative perspectives. Taught in English. May be repeated for credit when topic changes. Same as Film Studies 160 when topic is appropriate. (VII-B)

**180 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. Formerly East Asian Languages and Literatures 198. (VII-B)

**190 Junior-Senior Colloquium (4) W.** Specialized courses dealing with primary sources; required reports and papers. Each colloquium reflects the instructor's intellectual interest and is conducted as a discussion group. Limited to 15 students. Prerequisite: consent of instructor. May be taken three times for credit as topics vary. (VII-B)

**192 Junior-Senior Seminar (4).** Specialized courses that require analysis of a literary or cultural topic or problem through research and writing of an original research paper. Each seminar is offered in a quarter following East Asian Languages and Literatures 190 and is related to the colloquium's subject. Limited to 15 students. Prerequisite: East Asian Languages and Literatures 190 in preceding quarter or consent of instructor. May be taken for credit three times as topics vary.

**198 Directed Group Study (1 to 4).** Directed group study on special topics. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

**199 Independent Study (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.

### GRADUATE

**220 Topics in East Asian Cultural Studies (4).** Seminar, with topics varying from year to year. Research paper required. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

**260 Topics in East Asian Cinema (4).** An examination of the possibilities of East Asian cinematic narrative. Possible topics: cinematic history; cinema in popular culture; comparisons with literary texts; major auteurs. Emphasis on technical as well as on thematic aspects. Includes readings in film theory. Prerequisite: East Asian Languages and Literatures 160 or consent of instructor. May be repeated for credit as topics vary.

**290 Independent Study (4).** Directed research on topic determined in consultation with faculty member. A term paper or project is required. May be repeated for credit.

**299 Dissertation Research (4 to 12).** For students who have been admitted to doctoral candidacy. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

**399 University Teaching (4-4-4).** Required of and limited to Teaching Assistants. Satisfactory/Unsatisfactory grading only.

## DEPARTMENT OF ENGLISH AND COMPARATIVE LITERATURE

200 Humanities Office Building; (714) 824-6712  
 Brook Thomas, **Department Chair**

### Faculty

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 Emeritus of English* (drama, Shakespeare)  
 Rey Chow, Ph.D. Stanford University, *Professor of Comparative Literature* (Chinese literature, Asian literatures and cultures, contemporary critical theory, film)  
 Michael P. Clark, Ph.D. University of California, Irvine, *Dean of the School of Humanities (Acting) and Professor of English* (Colonial American literature, critical theory)  
 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 Gellay, Ph.D. Yale University, *Director of the Emphasis in Critical Theory and Professor of Comparative Literature* (eighteenth- and nineteenth-century European novel, critical theory, comparative literature)  
 Linda Georgianna, Ph.D. Columbia University, *Professor of English* (medieval literature and culture)  
 Oakley Hall, M.F.A. University of Iowa, *Professor Emeritus of English* (fiction writing, contemporary fiction)  
 John Hollowell, Ph.D. University of Michigan, *Campus Writing Director and Senior Lecturer in English* (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)  
 Abdul JanMohamed, Ph.D. Brandeis University, *Director of African-American Studies and Professor of English* (African literature, Black American literature, critical theory)  
 Victoria Kahn, Ph.D. Yale University, *Professor of English* (Renaissance literature, seventeenth-century English prose)  
 Laura H. Y. Kang, Ph.D. University of California, Santa Cruz, *Assistant Professor of Comparative Literature and Women's Studies* (Asian-American literature and culture, feminist theory, ethnic studies, gender)  
 Murray Krieger, Ph.D. Ohio State University, *University Research Professor of English* (critical theory, Renaissance lyric, eighteenth-century figures)  
 Richard W. F. Kroll, Ph.D. University of California, Los Angeles, *Associate Professor of English* (rhetoric, Restoration and eighteenth-century British literature, literary theory)  
 Julia Reinhard Lupton, Ph.D. Yale University, *Associate Professor of Comparative Literature and Director of the Comparative Literature Program* (Renaissance literature, literature and psychology)  
 Juliet Flower MacCannell, Ph.D. Cornell University, *Professor Emerita of Comparative Literature* (eighteenth-century French literature, modern semiotics, comparative literature)  
 Steven Mailloux, Ph.D. University of Southern California, *Associate Dean of Humanities, Graduate Study, and Professor of English* (rhetoric, critical theory, American literature, law and literature)  
 Lillian Manzor-Coats, Ph.D. University of Southern California, *Associate Professor of Comparative Literature* (Latin-American literature, literature and art)  
 James McMichael, Ph.D. Stanford University, *Director of Poetry, Programs in Writing, and Professor of English* (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 Emeritus 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 Emeritus of English* (Victorian literature, contemporary poetry)  
 Barbara L. Reed, Ph.D. Indiana University, *Senior Lecturer in English* (American literature, children's literature)  
 John Carlos Rowe, Ph.D. State University of New York, Buffalo, *Director of the UCI Critical Theory Institute and 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 Emeritus 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, *Associate Professor of Comparative Literature and Philosophy* (philosophy, aesthetics, comparative literature)  
 Victoria Silver, Ph.D. University of California, Los Angeles, *Associate Professor of English* (Renaissance literature, Milton)  
 Myron Simon, Ed.D. University of Michigan, *Professor Emeritus of English and Education* (American and Canadian literature, early twentieth-century English poetry, ethnic literature, rhetoric)  
 Brook Thomas, Ph.D. University of California, Santa Barbara, *Department Chair and Professor of English* (American literature, literature and law)  
 Harold Toliver, Ph.D. University of Washington, *Professor Emeritus of English* (Renaissance and seventeenth-century literature, theory of genre)  
 Andrzej Warminski, Ph.D. Yale University, *Professor of Comparative Literature* (Romanticism, critical theory)  
 Albert O. Wlecke, Ph.D. Michigan State University, *Professor Emeritus of English* (English and American Romanticism, teaching of composition)  
 Geoffrey Wolff, Novelist and Biographer, *Director of Fiction, Programs in Writing, and Professor of English and Creative Writing* (creative writing, fiction, biography)

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 their courses and teachers.

### 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.

Departmental 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 and Life Planning 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 and Life Planning 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 Programs in Writing**, which offer an emphasis in the writing of poetry or fiction. Undergraduate courses in journalism and non-fiction are also available, including formal instruction and workshop experience for staff members of the campus newspaper. The aim of these programs 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 pages 57–61.

**School Requirements:** See page 190.

### Departmental Requirements for the English Major

Three courses selected from E 28A (or E 28D), E 28B, E 28C (or E 28E), CL 50A, CL 50B, CL 50C, including either E 28A, E 28D, or CL 50A (in some cases, students who change their majors to English after taking E 6, E 7, E 8 may petition to substitute one of those courses for a course from the E 28 series); CR 100A; CR 100B and CL 100 (in some cases, students may petition to substitute courses numbered 102–106 for these courses); E 102A, E 102B, E 102C, E 102D; at least three more Departmental courses numbered 102 or above (excluding E 140, E 150, WR 139, or WR 179); and either E 105 or CL 105.

Competence in a foreign language, either classical or modern, equivalent to six quarters of work at UCI (in classical languages, 1A-B-C, 25, 101, 102) 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 language 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 102s must be completed successfully at UCI.

### Departmental Requirements for the English Minor

Three courses selected from E 28A (or E 28D), E 28B, E 28C (or E 28E), CL 50A, CL 50B, CL 50C, E 6, E 7, E 8, CL 8, including at least one quarter of E 28; and at least five English or writing courses numbered 102 or higher (excluding WR 139), although two courses from the following may be substituted: CR 100A, CR 100B, WR 100B, CL 100, CL 103, 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 coherent programs of study with their faculty advisors, 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, or medicine. 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 the UCI Department of 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.

Students are also encouraged to take advantage of the opportunity to study abroad through the Education Abroad Program. See the Center for International Education section of the *Catalogue* or your academic counselor for additional information.

## 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. 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, but there are close administrative and intellectual ties among the programs.

Specific requirements for the graduate degrees will be established 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 must submit scores for the Graduate Record Examination (GRE) including the Subject Test in Literature in English; applicants to the Comparative Literature program need not submit the Subject Test in Literature in English.

Only in exceptional circumstances will students be permitted to undertake programs of less than six full courses during the academic year. The normal expectation is enrollment in three courses each quarter; Teaching Assistants take two courses in addition to earning credit for University teaching. Students who are not teaching should be able to complete course work in two years. The Ph.D. qualifying examination should be taken within a couple of quarters after courses are finished. Dissertations can 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. can-

didates, 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.

The Murray Krieger Endowed Fellowship in Literary Theory will be awarded for the first time in the 1996-97 academic year. It is intended for an outstanding entering graduate student who is pursuing the Ph.D. in English or Comparative Literature and who demonstrates a primary interest in theory as theory relates to literary texts. This prestigious grant is the foremost fellowship in the Humanities and one of the largest at UCI. The five-year support package is worth over \$92,000. Also included is a readership and study space in the René Wellek Collection at the UCI Library, in addition to benefits such as priority housing and access to child care. A range of other fellowships is also available to students in the Department.

## Emphasis in Feminist Studies

A graduate emphasis in Feminist Studies also is available. Refer to the Women's Studies section of the *Catalogue* for information.

## 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 in English 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 is examined in four areas: (1) literary theory and criticism; (2) literary form; (3) historical period of English and/or American literature; and (4) selected major authors. The student has the opportunity to present personal choices for the examination, but the choices must enable an individual to demonstrate breadth of historical knowledge and 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

Applicants to the Comparative Literature program must hold a B.A. or equivalent degree and should normally have majored in Comparative Literature, English, or a foreign literature. Majors in other disciplines (e.g., philosophy, history) can be considered, provided that a sufficient background in literature and literary theory, as well as in at least one foreign language, is demonstrated.

For the graduate student in Comparative Literature a professional competence in foreign languages is essential. French and German are usually expected of all doctoral students, but other languages (for instance, Spanish, Italian, Russian, or an Asian language) may be substituted. A classical language may prove indispensable for work in many traditional fields of literary study, and the scholar's own specialization may require the mastery of still other languages.

An important part of the foreign language requirement is the course CL 220 (Problems in Translation) in which the student plans and carries out a high-quality translation of a literary or theoretical 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

Entering students are assigned a faculty advisor who usually serves as the chair of the student's M.A. examination committee (which consists of at least two other members of the faculty). The M.A. examination is normally taken during the quarter in which the student completes the course work; nine courses, including at least one CL 220, are required. The candidate submits an M.A. paper as well as a statement of purpose outlining past and future course work and preliminary plans for the qualifying examination. The M.A. examination itself consists of a discussion of the student's paper and the statement of purpose. In practice, the examination resembles an extended advising session, but with particularly close attention given to the student's paper.

### Doctor of Philosophy in Comparative Literature

The doctoral program in Comparative Literature is designed to prepare the student for a professional career in literary studies. Details of the program may be found in the departmental graduate student

handbook. Normally, students who have not done graduate work at another university complete at least 16 courses before the qualifying examination, including two translation seminars (CL 220).

Upon completion of the course work, the student takes a general examination based on six topics formulated by the student in consultation with the four faculty members who will make up the examination committee. The topics should combine historical breadth and some generic variety with special fields. The examination is part written, part oral, according to a formula decided by the student and the committee. The examination as a whole should reflect the student's ability to work in at least two foreign languages.

After passing the qualifying examination, the student forms a dissertation committee of three faculty members, formulates a dissertation topic in consultation with them, and submits a prospectus for the dissertation along with a preliminary bibliography. The study toward the Doctor of Philosophy degree culminates in the writing of a suitable dissertation, often on a comparative subject, although subjects lying within a single literature or dealing with general literary and theoretical problems not confined to any specific literatures are also acceptable.

## 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 British Literature to the Renaissance (4).** Lecture, three hours. Various topics in literature of the Middle Ages and Renaissance in English, such as the heroic, the rise of tragedy, women in literature, literature and nature. Primarily designed for nonmajors. (IV)

**E 7 Literature in English from the Eighteenth to the Twentieth Centuries (4) W.** Lecture, three hours. Various topics in literature in English outside the U.S., such as Romanticism, the development of the novel, revolution and industrialism in literature, the literary representation of war. Primarily designed for nonmajors. (IV)

**E 8 American Literature (4) S.** Lecture, three hours. Various topics in American literature, such as the literature of colonialism, U.S. literature and popular culture, the New England tradition, the English literature of the Pacific Rim. Primarily designed for nonmajors. (IV)

**CL 8 Comparative Literature (4).** Lecture, three hours. Comparative studies in different literatures. Readings in English and in English translation on such generic topics as tragedy, epic, short tales, and such thematic topics as love, war, cities, travel writing, politics, violence. May be substituted for one quarter of the E 6, E 7, E 8 series.

**CL 9 Introduction to Multicultural Topics in Literature (4).** 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 28 The Nature of Literature F, W, S, Summer.** Discussion, three hours. Reading of selected texts to explore the ways in which these modes formulate experience. Students write several short analytic papers in each course. E 28D and E 28E also require creative writing. Prerequisite: satisfaction of the lower-division writing requirement. E 28A and E 28D may not both be taken for credit; E 28C and E 28E may not both be taken for credit.

**E 28A The Poetic Imagination (4).** (IV)

**E 28B Comic and Tragic Vision (4).** (IV)

**E 28C Realism and Romance (4).** (IV)

**E 28D The Craft of Poetry (4).** (IV)

**E 28E The Craft of Fiction (4).** (IV)

**WR 30 The Art of Writing: Poetry (4) F, W, S.** Beginners' workshop in the writing of poetry, evaluation of student manuscripts, and parallel readings. May be repeated once for credit with a different instructor. (I)

**WR 31 The Art of Writing: Prose Fiction (4) F, W, S.** Beginners' workshop in fiction writing, evaluation of student manuscripts, and parallel readings. May be repeated once for credit with a different instructor. (I)

**WR 32 The Art of Writing: Drama (4).** Beginners' workshop in playwriting, evaluation of student manuscripts, and parallel readings. Same as Drama 32. (I)

**WR 37 Intensive Writing (6).** Discussion, three hours; tutorial, two hours. Deals with review of grammar and usage, the process of writing, rhetorical principles, and guided practice in writing. Readings selected from current fiction and nonfiction; writing assignments require analysis of readings and demonstration of rhetorical principles. Successful completion of WR 37 with letter grade of C or above fulfills the Subject A requirement and one quarter of the lower-division writing requirement. Students who achieve a C- or below must repeat the course or enroll in the equivalent. Students held for Subject A must satisfy the requirement before the beginning of their fourth quarter of residency. Prerequisite: students must have taken the Subject A examination. Enrollment open to recommended students only.

**WR 38 The Art of Writing: Nonfiction and Journalism (4).** 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 before the beginning of their fourth quarter 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 37 or WR 39B. (I)

**CL 40A, B, C Development of Drama (4, 4, 4) F, W, S.** Same as Drama 40A, B, C. (IV, VII-B)

**CL 50 The Literary Tradition F, W, S.** Lecture, three hours. The reading of selected major works in the Western literary tradition. Prerequisite: satisfaction of the lower-division writing requirement.

**50A Homer to Renaissance (4). (IV)**

**50B Renaissance to Romanticism (4). (IV)**

**50C Modernism (4). (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 20 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 for credit by Comparative Literature majors as topics vary. Prerequisite: a lower-division series in literature.

**CR 100A Literary Theory and Criticism (4) F, W, S.** 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) F, 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 20 students. Each instructor announces a theoretical topic deriving from CR 100A and explores it through a number of theoretical and literary texts. Prerequisite: English and Comparative Literature CR 100A. May be taken for credit twice.

**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 102 English and American Literary History F, W, S, Summer.** Lecture, three hours. Studies of works representative of historical periods of literature in English, with attention to literary history, treating at a minimum more than one author and more than one genre. Prerequisites: upper-division standing; majors only. May be repeated for credit as topics vary.

**102A Medieval and Renaissance Literature (4)**

**102B Restoration and Eighteenth-Century Literature (4)**

**102C Romantic and Nineteenth-Century Literature (4)**

**102D Twentieth-Century Literature (4)**

**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.** Lecture, three hours. A series of lectures on and discussions of announced comparative topics in literary criticism, history, genres, modes, major authors. May be repeated for credit as topics vary. Same as East Asian Languages and Literatures 150 or Women's Studies 170CB when topic is appropriate.

**CR 103 Contemporary Critical Theory (4).** Lecture, three hours. Discussion of contemporary critical theory. May be repeated once for credit toward graduation, but not repeated for credit within the major. Prerequisite: English and Comparative Literature CR 100A.

**CL 104 The Interdisciplinary Course (4) F, W, S.** Lecture and discussion course open to all students, three hours. 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. May be taken for credit as topics vary. Same as Art History 114, Art History 125, Humanities 110, or Women's Studies 170CD when topic is appropriate.

**E 105 Multicultural Topics in English-Language Literature (4) F, W, S.** Treats the literary consequences of relations and conflicts between races, genders, classes, ethnic groups, and other forms of cultural identity prevalent at different moments in history. May be repeated for credit as topics vary. Same as Women's Studies 170CF when topic is appropriate. (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. Same as Women's Studies 170CE when topic is appropriate. (VII-A)

**E 106 Advanced Seminar (4).** Three hours. Focuses on a topic within an area already studied. Sections limited to 25 students. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

**WR 109 Nonfiction and Journalism (4).** 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.** 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.** 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 113 Novel Writing (4).** 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 or minors. (I)

**E 139E Critical Writing: Topics in English Literature (4).** 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).** 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).** 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).** 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).** 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).** 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 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 Humanities 200 (The Nature and Theory of History) and Humanities 291 (Interdisciplinary Topics) of special interest.

**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.** Introduction to criticism and aesthetics for beginning graduate students. Readings from continental, English, and American theorists. Same as Humanities 220A, B, C.

**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.** Satisfactory/Unsatisfactory Only.

**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.** Satisfactory/Unsatisfactory Only.

**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 to 4) 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

340 Humanities Hall; (714) 824-5386

Linda Williams, **Program Director**

### Faculty

Rhona Berenstein, Ph.D. University of California, Los Angeles, *Assistant Professor of Film Studies* (television, film genre, film history)

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* (film history and criticism, French cinema, film and society)

Rey Chow, Ph.D. Stanford University, *Professor of Comparative Literature* (Chinese literature, Asian literatures and cultures, contemporary critical theory, film)

Edward Fowler, Ph.D. University of California, Berkeley, *Associate Professor of Japanese* (modern Japanese literature, film, and cultural studies)

Anne Friedberg, Ph.D. New York University, *Associate Professor of Film Studies* (film history and theory, film and postmodernism, avant-garde and experimental film)

James Herbert, Ph.D. Yale University, *Associate Professor of Art History and Film Studies* (modern European art, critical theory, and visual culture)

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, *Professor of Film Studies* (film history and theory, German film, modern German studies)

John Carlos Rowe, Ph.D. State University of New York at Buffalo, *Director of the UCI Critical Theory Institute and Professor of English* (film and documentary images of war, film theory)

Sally A. Stein, Ph.D. Yale University, *Associate Professor of Art History* (American art, history of photography, photography and media)

Linda Williams, Ph.D. University of Colorado, *Director of the Program in Film Studies and Professor of Film Studies* (film history and genre; women and film, feminist theory, melodrama and pornography)

Our understanding of the modern world is to a large extent a mediated one: film and television greatly influence our sense of who we are and how we live. Yet so much of our exposure to these forces remains taken for granted, indeed unreflected. The sights and sounds of movies and television compel and excite us, perhaps more so than many of us realize or would like to admit. An undergraduate education in Film Studies encourages students to explore the appeal and operation of these complex meaning-producing machines we call cinema and television.

The course work leading to the B.A. degree in Film Studies trains students to become visually and aurally literate, to grasp films and images in their socioeconomic, political, and aesthetic dimensions. This entails looking at mainstream films with a more critical gaze as well as gaining a regard for different kinds of movies and alternative ways of seeing. The Film Studies curriculum is systematic and comprehensive; courses are typically taught by regular faculty in classes of about 20 to 50 students. During the 1995-96 academic year, there were more than 85 Film Studies majors enrolled at UCI.

The Program familiarizes students with the history, theory, and art of cinema, individual filmmakers, period styles, genres, and aspects of television. Additional courses address the practical and technical concerns of film production and scriptwriting. Regular course offerings are complemented by student-run film series; special screenings and retrospectives; visits from directors, critics, and scholars; and trips to film festivals, as well as critical symposia.

Film Studies at UCI is unique in its concentration on the history, theory, and criticism of cinema and television. The faculty has published books and articles on such topics as French surrealist cinema, films of the Third Reich, images of the Vietnam war, Hollywood melodramas, contemporary avant-garde directors, film and postmodernism, and women filmmakers. The Program provides its

majors with a thorough appreciation of the modern media's innumerable functions in contemporary society.

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

A degree in Film Studies will 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. Graduates from the program have gone on to a host of different careers. Some have pursued graduate work in critical film studies at leading institutions such as the University of California, Los Angeles, and the University of Iowa. Others have entered M.F.A. programs in production at places like the University of Southern California or San Francisco State University. Many are now at work in various sectors of the entertainment industry as feature film editors, executives in video distribution companies, technicians for local news programs, and independent filmmakers.

The Career and Life Planning 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 and Life Planning Center section for additional information.

### REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57-61.

**School Requirements:** See page 190.

#### Program Requirements for the Major

Film Studies 85, 101A-B-C, 102, 110, either 117A or 120A, 139, and five of the following: 112, 113, 114, 115, 160, 198, and/or no more than two of the following: 117B, 117C, 120B, 120C.

**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

Film Studies 85, 101A-B-C, and three of the following: 102, 110, 112, 113, 114, 115, 160, 198.

**Residence Requirement for the Minor:** Four upper-division courses must be successfully completed at UCI.

## Courses in Film Studies

### LOWER-DIVISION

**85 Visual Media and Contemporary Culture (4) F.** An interrogation of the authority of the image in contemporary culture. Serves as an introduction to the critical vocabulary of film and television studies.

### UPPER-DIVISION

#### 101A-B-C History of Film

**101A The Silent Era (4) W.** An investigation of the technological, economic, social, and aesthetic determinants of the cinema in its first 30 years. The formal strategies and historical importance of films by Méliès, the Lumières, Porter, Griffith, Murnau, Lang, Eisenstein, Pudovkin, and others. Prerequisite: Film Studies 85.

**101B The Sound Era I (4) S.** Explores the formal strategies and socio-historical dynamics of films made between 1930 and 1960, concentrating on representative cinemas and works by Lang, Riefenstahl, Renoir, Welles, De Sica, Ophüls, Kurosawa, and others. Prerequisite: Film Studies 101A.

**101C The Sound Era II (4) F, W, S.** Studies narrative strategies and formal possibilities in films made since 1960, framing aesthetic questions in political, social, and economic terms, using selected features from Western and non-Western countries. Prerequisite: Film Studies 101B.

**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.

**110 Film Theory (4) F, W, S.** A survey of major directions in film theory of the silent and sound eras. Includes Frankfurt School theorists of mass culture, formalism, realism, auteurism, semiotics, feminism, and cultural studies. Prerequisite: Film Studies 101A-B-C or consent of instructor.

**112 Film Genre (4) F, W, S.** Analytical and theoretical approaches to the serial productions we call "genre" films, the patterns of recognition known as westerns, weepies, musicals, horror films, and others. Prerequisite: Film Studies 101A-B-C or consent of instructor. May be repeated for credit as topics vary. Same as Women's Studies 174A when topic is appropriate.

**113 Film/Narrative/Image (4) S.** What relations do sound, image, and story assume in film narrative? In what ways does film interact with and borrow from other story-telling media? How have filmmakers explored non-narrative strategies and to what end? Prerequisite: Film Studies 101A-B-C or consent of instructor. May be repeated for credit as topics vary.

**114 Film and the Other Arts (4) F, W, S.** A synthetic entity, film draws on both established and popular arts. Looks at film's exchanges with high and low culture, exploring its relation to areas such as photography, music, painting, and architecture. Prerequisite: Film Studies 101A-B-C or consent of instructor. May be repeated for credit as topics vary.

**115 Film Authorship (4) F, W, S.** Theoretical and analytical discussions of film authorship, focusing on case studies of directors, producers, scriptwriters, and artists. Prerequisite: Film Studies 101A-B-C or consent of instructor. May be repeated for credit as topics vary.

**117A Introduction to Screenwriting (4) F, W, S.** Introduction to the history and technique of the screenplay, with a particular focus on its different aesthetic forms as well as on the various roles it has assumed within the evolution of the film industry.

**117B Basic Script Writing (4) F, W, S.** Exercises in the development of screenplays with emphasis on formal and structural considerations as well as on film industry praxis. Conducted in an intimate workshop setting with frequent group discussions of student scripts-in-progress. Prerequisite: Film Studies 117A.

**117C Scriptwriting Workshop (4) F, W, S.** Continuation and intensification of work initiated in 117B. Students complete a full-length screenplay. Concentrates on both practical and technical concerns, addressing pragmatic and aesthetic questions in intensive small-group discussions. Prerequisite: Film Studies 117B.

**120A Basic Production (4) F, W, S.** Introduction to the basic apparatus of video/film production. The elementary essentials of production, including the use of camera and lenses, lighting, editing, and sound. Formerly Film Studies 50A.

**120B Intermediate Production (4) W.** Students work on individual and group projects, utilizing skills and insights introduced in Film Studies 120A. Prerequisite: Film Studies 120A. Formerly Film Studies 50B.

**120C Production Workshop (4) S.** As film and video are collaborative media, students form production groups and ultimately produce final 10–15 minute film/video projects. Prerequisite: Film Studies 120B.

**139 Writing About Film (4) F, W, S.** Practical exercises in film criticism as a form of cultural analysis. Requires at least 4,000 words of assigned composition. Film Studies majors are given admission priority. Prerequisites: Film Studies 85 and 101A; satisfaction of lower-division writing requirement; junior standing.

**160 National Cinemas (4) F, W, S.** Period styles, national schools, oppositional movements, e.g., Classical Japanese Cinema, Italian Neorealism, Nouvelle Vague, Weimar Film, Cinema Nôvo. Same as East Asian 160, French 160, German 160, Italian 160, or Spanish 160 when topics are appropriate. May be repeated for credit when topics vary. (VII-B)

**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.

## GRADUATE

Graduate seminars in Approaches to Film Theory, Problems in Film Analysis, and Advanced Film Theory and Analysis are offered as Humanities graduate courses. See page 227.

## DEPARTMENT OF FRENCH AND ITALIAN

312 Humanities Hall; (714) 824-6407

Richard L. Regosin, **Department Chair**

### Faculty

Luke P. Bouvier, Ph.D. Cornell University, *Assistant Professor of French* (nineteenth-century narrative)

Ellen S. Burt, Ph.D. Yale University, *Associate Professor of French* (eighteenth-century French literature and nineteenth-century poetry)

David Carroll, Ph.D. The Johns Hopkins University, *Professor of French* (literary theory and twentieth-century French literature)

James Chiampi, Ph.D. Yale University, *Associate Professor of Italian* (Italian Renaissance)

Jacques Derrida, Doctorat d'Etat ès Lettres, *Professor of French, Philosophy, and Comparative Literature* (philosophy, critical theory)

Suzanne Gearhart, Ph.D. The Johns Hopkins University, *Professor of French* (seventeenth- and eighteenth-century French literature, philosophy and literature)

Elizabeth Guthrie, Ph.D. University of Illinois, *Director of the Program in Women's Studies, Director of the French Language Program, and Lecturer in French* (second-language acquisition and teaching)

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 Emerita of French* (eighteenth-century French literature)

Carrie J. Noland, Ph.D. Harvard University, *Assistant Professor of French* (twentieth-century poetry; World War II and literature of the avant-garde)

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)

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 and Life Planning 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 and Life Planning 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. Many courses are multidisciplinary, bringing together reading material and methodologies from the various disciplines in order to address interpretive problems of French literature, culture, and history. In recent years, courses have been offered in literature and existentialism; representations of the Franco-Prussian war; drama and politics in the court of Louis XIV; literature and French fascism; memory, orality, and tradition in French-African literature; images of death in the literature and culture of the French Renaissance. 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.

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 pages 57-61.

**School Requirements:** See page 190.

### Departmental Requirements for the Major

French 100A-B, 101A-B-C, and nine other upper-division courses taught in the Department. Students may take up to two courses from the Department offerings taught in English.

**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 major requirements.

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 faculty members 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 comprised of five faculty members: three from the Department, one from outside the Department who represents the student's outside area of specialization, and, for the qualifying examination, another faculty member not affiliated with the Department who represents the faculty-at-large. One member of the Committee is expected to direct the dissertation.

**Language Requirements:** A reading knowledge of two foreign languages relevant to the student's area of specialization and subject to the approval of the 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.

A graduate emphasis in Feminist Studies also is available. Refer to the Women's Studies section of the *Catalogue* for information.

**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 on behalf of the Dean of Graduate Studies and 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. French 1A-B-C and S1AB-BC may not both be taken for credit.

**S1AB-BC Fundamentals of French (7.5-7.5) Summer.** First-year French in an intensified form. Same as French 1A-B-C during academic year. Prerequisite for S1AB: none; for S1BC: French S1AB or 1B, or two years of high school French. Formerly French S1A-B. French S1AB-BC and 1A-B-C may not both be taken for credit.

**2A-B-C Intermediate French (4-4-4)** 2A (F, S), 2B (F, W), 2C (W, S). Texts of contemporary literary or social interest provide the focus for more advanced conversation, reading and composition. Classes are conducted entirely in French. Prerequisite: normally three years of high school French or one year of college French. French 2A-B-C and S2AB-BC may not both be taken for credit. (2A: VI)

**S2AB-BC Intermediate French (6-6) Summer.** Second-year in an intensified form. Same as French 2A-B-C during academic year. Prerequisite: French 1C or three years of high school French. Formerly French S2A-B. French S2AB-BC and 2A-B-C may not both be taken for credit. (S2AB: VI)

**13 Conversation (4) F, W, S.** Helps students increase their fluency and enrich their vocabulary. Prerequisite: French 2C or equivalent.

### 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 100B.

NOTE: The prerequisite for the following upper-division courses is French 101A-B-C or the equivalent. The content of these upper-division courses changes yearly. Courses numbered 110 through 198, except 139 and 180, may be repeated for credit when topics change.

**110 Problems in French Culture (4).** Same as Women's Studies 170FB when topic is appropriate. (VII-B)

**111 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 164B. Formerly French 11. *Not offered 1996-97.*

**112 Topics in Structural Linguistics (4).** Topics in structural linguistics, semiotics, and poetics.

**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).** Literature and cultures of the francophone world. Same as Women's Studies 170FC when topic is appropriate. (VII-B)

**130 Junior-Senior Seminar in French Literature (4).** Provides advanced students in French literature an opportunity to explore in-depth selected topics in French literature and culture in a seminar environment. Class discussion and independent research projects are emphasized. Prerequisite: two upper-division French literature courses beyond French 101A-B-C. May be repeated for credit as topics vary.

**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. Same as Women's Studies 170FA when topic is appropriate. (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.

**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 Department of 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 220 (Literary Theory); and Humanities 270 (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.

**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. (2A: VI)

**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. Prerequisite: Italian 2C or equivalent; Italian 100A-B recommended. (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. *Not offered 1996-97.*

**140A-B-C Readings in Medieval and Renaissance Literature (4-4-4).** In English.

**160 Italian Cinema (4).** In English. May be taken for credit twice. 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) 824-6406  
Meredith Lee, **Department Chair**

### Faculty

- Gail Hart, Ph.D. University of Virginia, *Associate Dean of Humanities, Undergraduate Study, and Associate 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 Professor of German* (lyric poetry, eighteenth-century literature, Goethe, German-Scandinavian literary relations)  
Herbert Lehnert, Ph.D. University of Kiel, *Research Professor of German* (modern German literature)  
William J. Lillyman, Ph.D. Stanford University, *Research Professor of German* (Romanticism, Goethe, Tieck)  
Bert Nagel, Ph.D. University of Heidelberg, *Professor Emeritus of German* (medieval German literature)  
Jens Rieckmann, Ph.D. Harvard University, *Professor of German* (twentieth-century literature, fin-de-siècle Austria, Hofmannsthal, Thomas Mann)  
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 pursues a program of German studies as part of the humanistic endeavor to understand and evaluate culture. Departmental courses are focused on language, literature, and film *in context*, that is, within the historical, social, intellectual, and political circumstances of their production and continuing reception. Clearly, we come to understand ourselves and our immediate culture much better through the study of different languages and cultural systems. Therefore, university language study is not merely a matter of memorizing vocabulary and practicing pronunciation. It is the serious investigation of a foreign linguistic system and the cultures which are defined by it. It is difficult—in fact, nearly impossible—for us to scrutinize and analyze something we know as intimately as our native language, and yet this is the order by which we formulate our thoughts and the order which may sometimes formulate our thoughts for us. The “foreignness” of a foreign language allows us to objectify an entire linguistic system, to observe its structure and its usage, and then to make comparisons with our own linguistic situation. This kind of knowledge of one’s native language is the foundation of critical reflection on texts of

any nature—historical, philosophical, literary, political, legal, journalistic, and others. Thus, serious study of a foreign language is absolutely crucial to a university education. The Department teaches its language courses with this principle in mind and seeks to provide its students with a framework for these linguistic and cultural comparisons.

Department literature and film courses offer a variety of critical perspectives from historical, social, or politically engaged readings to feminist and post-structuralist analysis. Topics range from studies of individual authors, periods, and genres to the history of German-language literature and film, the theory of criticism, and the relations of German-language literature to other literatures.

## Undergraduate Program

The German major offers alternative emphases, one in literature and another in linguistics. The majority of students choose the literature major.

All courses in the Department are taught in German to the extent compatible with the aim of the course. In the basic courses, students develop an understanding of the language and its cultural context while learning the necessary skills for oral and limited written communication. Sessions in the language laboratory, the recently updated Language Learning Resource Center, assist students with their speaking and listening skills. By the end of the first year, students have learned the basic structure of the German language as they develop fundamental reading, writing, and speaking skills and listening comprehension.

The intermediate and advanced levels reinforce these basic skills, while concentrating on increasing reading speed, writing fluency, and cultural competency.

After completion of the intermediate level, students enroll in the Introduction to Literature course (German 101), which provides an introduction to genre, periodization, and the German terminology used in critical analysis. This course is taken in preparation for the upper-division literature and film courses (German 102, 117, 118, 119, 120), which range historically from the Reformation to the present and cover a variety of topics and approaches. A further series of courses (German 130, 140, 160) is taught in English for both German students and those who do not speak the language, and covers topics in literary theory and criticism as well as German-language cinema.

Students are encouraged to participate in work- and study-abroad programs during the summer and their junior year. The Department recommends the University’s Education Abroad Program (EAP) in Göttingen, Germany. Göttingen is an old university town in central Germany, where EAP students complete an advanced language program and enroll in university courses with great success, usually achieving native or near-native fluency during this exciting year abroad. All EAP courses taken in Göttingen are accepted for UCI graduation credit and many contribute to fulfillment of the German major and minor requirements. More information is available from your academic counselor.

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

The ability to speak and write German can open up opportunities in communications, foreign trade and banking, transportation, government, science and technology, tourism, library services, and teaching. Because German plays such an important role in modern technology, employers in international law, business, the foreign service, the airline industry, journalism, professional translating, and all levels of education increasingly seek students with a knowledge of German. German is excellent preparation for professional schools. It can be combined successfully with work in the natural sciences, business and management, and the computer sciences, and it is invaluable for advanced work in the humanities and the arts.

Recent graduates of the German Department have begun careers in international law, business, the foreign service, the airline industry, journalism, and all levels of education, including university teaching.

The Career and Life Planning 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 and Life Planning Center section for additional information.

## REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57-61.

**School Requirements:** See page 190.

### 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, German philosophy, or German political science, as approved by the advisor for the major. The upper-division writing requirement must be met by additional course work either within or outside the Department.

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. The upper-division writing requirement must be met by additional course work either within or outside the Department.

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.

## Distinguished Visiting Professors

The Department's Distinguished Visiting Professors program brings students into direct contact with some of the outstanding scholars in the field of German Studies. Distinguished Visiting Professors typically visit for one quarter, during which they teach a graduate course and an undergraduate course and present a lecture to which students, faculty, and other members of the University community are invited. Program participants include Bengt Algot Sørensen (Odense), Uwe Ketelsen (Bochum), Peter Pütz (Bonn), Leslie Adelson (Ohio State), Hans Wysling (Zürich), Hans-Wolf Jäger (Bremen), Norbert Oellers (Bonn), Hans Rudolf Vaget (Smith College), Heinrich Detering (Göttingen), Wolfgang Martens (Munich), and Anna Kuhn (UC Davis).

## Graduate Program

In its graduate courses the Department stresses theoretical understanding of the nature of literature and culture. Seminars focus on German literary and cultural development after 1700. An emphasis in Critical Theory is available to graduate students in all departments of the School of Humanities. A graduate emphasis in Feminist Studies also is available. Refer to the Women's Studies section of the *Catalogue* for information.

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 on the list. Since it should ultimately contain representative selections from various eras of German literature and some works of criticism, a tentative list must be discussed with the graduate advisor before the end of the fall quarter of the year in which the candidate expects to receive the M.A. Candidates should indicate on the list a number of works with which they are especially familiar. In its final form (including works read during the course of study both in and out of class) the list will be submitted together with the 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 Year of Residence.**

## DOCTOR OF PHILOSOPHY IN GERMAN

The Department requires a minimum of 22 approved courses from students entering with a bachelor's degree. These may include courses in philosophy, history, comparative literature, and others suitable for the individual student's program of study. The student also will participate in each of the German Department's colloquia. The student will augment the reading list and keep it current during the whole course of study. At least two years of residence are required.

Students entering with the master's degree will be advised individually as to remaining course requirements.

Since the majority of Ph.D. candidates choose careers as teachers, the German Department recognizes its obligation to offer them preparatory experience. Therefore, all candidates for the Ph.D. are required to teach under the supervision of a faculty member at least one course in each of three quarters (for which they will receive credit as German 399). Three of these courses may be counted toward the 22 courses required for the Ph.D.

**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 knowledge of 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 on behalf of the Dean of Graduate Studies and 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 signature page of the dissertation.

## Courses in German

### LOWER-DIVISION

**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. German 1A-B-C (10A-B-C) and S1AB-BC may not both be taken for credit.

**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.

**S1AB-BC Fundamentals of German (7.5-7.5) Summer.** First-year German in an intensified form. Same as German 1A-B-C during academic year. Prerequisite for S1AB: none; for S1BC: German S1AB or 1B, or two years of high school German or one semester of college-level German. German S1AB-BC and 1A-B-C (10A-B-C) may not both be taken for credit.

**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. (2A: VI)

**10A-B-C Fundamentals of German: Individualized Instruction (1 to 5, 1 to 5, 1 to 5) F, W, S.** Basic language skills of understanding, reading, writing, and speaking. For students wishing to advance at an individual pace. Prerequisite: junior standing. Students may complete the first-year German sequence by combining quarters selected from German 1A-B-C and 10A-B-C. Credit will be given for 1A or 10A, 1B or 10B, and 1C or 10C. German 10A-B-C (1A-B-C) and S1AB-BC may not both be taken for credit.

**50 Science, Society, and Mind (4) F, W, S.** Historical, philosophical, and literary reflections by German writers on the rise of the modern sciences. In English. Designed primarily for nonmajors. May be taken three times for credit as topics vary. (IV, VII-B)

**53 Advanced Conversation (2) S.** Includes reading of political and cultural material. Conducted in German. May be repeated for credit. Prerequisite or corequisite: German 2C.

**99 Special Studies German (1 to 5) F, W, S.** Consultation with instructor necessary prior to enrollment. Prerequisite: consent of instructor.

### UPPER-DIVISION

NOTE: Upper-division courses normally are taught in German. Exceptions are German 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. Prerequisite: German 2C or equivalent or consent of instructor. (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. (VII-B)

**102B Literature and Society 1918-1945 (4).** See above description. Prerequisite: German 2C or consent of instructor. (VII-B)

**103 German Phonetics (4) S.** Contrastive analyses of the sound of English and German. Emphasis on standard German pronunciation. Prerequisite: German 2C. *Not offered 1996-97.*

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 130.

**117 Topics in German Literature 750-1750 (4).** Specific course content determined by individual faculty members. Example: Luther and the European Renaissance. Same as Women's Studies 170GA when topics are appropriate. (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 Women's Studies 170GB when topics are appropriate. (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 Women's Studies 170GC when topics are appropriate. (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 Women's Studies 170GD when topics are appropriate. (VII-B)

**130 Topics in German Literature (4).** Literary topics not fully contained within the periods listed above, such as "German Comedy" and "The Novel from Wieland to Fontane." Same as Women's Studies 170GE when topics are appropriate.

**139 Writing about Literature (4).** In English. Requires at least 4,000 words of assigned composition based upon readings in German 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 Women's Studies 170GF when topics are appropriate.

**140 Topics in Literary Theory and Criticism (4).** In English. Theoretical dimensions of literary criticism and the German philosophical tradition. Topics such as Marxism, Freudian thought, the German Idealistic tradition of aesthetics, Historicism, twentieth-century hermeneutics, Frankfurt School, and *Rezeptionsästhetik* are explored in a selection of theoretical, critical, and literary texts. Same as Women's Studies 170GG when topics are appropriate.

**150 German Literature in Translation (4).** In English. Major German literary works in translation. Prerequisites: satisfaction of the lower-division writing requirement; junior standing. May be repeated for credit as topics vary. Same as Women's Studies 170GH when topic is appropriate. (VII-B)

**160 German Cinema (4).** Historical, theoretical, and comparative perspectives on German cinema. Same as Film Studies 160 or Women's Studies 170GJ when topic is appropriate. (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. Applicants and other interested students are encouraged to contact the Department for a description of current offerings.

**200 Literary Criticism (4)**

**210 Literary Theory (4)**

**220 Selected Topics in German Linguistics (4)**

**230 Literary and Cultural History (4)**

**290 Independent Study (4).** Counted toward course requirements for the M.A. or Ph.D. A term paper or project is required. Letter grade only. May be repeated for credit.

**298 Independent Directed Reading (4 to 12).** For students preparing for doctoral examination. Satisfactory/Unsatisfactory Only.

**299 Dissertation Research (4 to 12).** For students who have been admitted to doctoral candidacy. Satisfactory/Unsatisfactory Only.

**398A-B The Teaching of German (2-2) F, W, S.** 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) 824-6521

Steven C. Topik, **Department Chair**

### Faculty

Marjorie A. Beale, Ph.D. University of California, Berkeley, *Assistant Professor of History* (European intellectual and cultural)

Dickson D. Bruce, Jr., Ph.D. University of Pennsylvania, *Professor of History* (American culture, African-American history)

Yong Chen, Ph.D. Cornell University, *Assistant Professor of History and Asian American Studies* (Asian American history)

Cornelia H. Dayton, Ph.D. Princeton University, *Associate Professor of History* (Early American, legal and social, women's)

Alice Fahs, Ph.D. New York University, *Assistant Professor of History* (U.S. intellectual/cultural history)

Thelma Foote, Ph.D. Harvard University, *Assistant Professor of History and African-American Studies* (early America, African-American history)

Richard I. Frank, Ph.D. University of California, Berkeley, *Associate Professor of History and Classics* (Roman empire, Classics)

Dorothy Fujita-Rony, Ph.D. Yale University, *Assistant Professor of Asian American Studies and History* (Asian American, Filipino American history)

Jeff Garcilazo, Ph.D. University of California, Santa Barbara, *Assistant Professor of Chicano/Latino studies and History* (Chicana/Chicano and Latina/Latino Studies, American working-class)

James B. Given, Ph.D. Stanford University, *Professor of History* (medieval Europe)

Douglas M. Haynes, Ph.D. University of California, Berkeley, *Assistant Professor of History* (social and cultural history of modern Britain, social history of modern medicine)

Lamar M. Hill, Ph.D. University of London, *Professor of History* (Tudor-Stuart Britain)

Robert V. Hine, Ph.D. Yale University, *Professor Emeritus of History* (intellectual history of the American West)

Karl G. Hufbauer, Ph.D. University of California, Berkeley, *Professor of History* (social history of science)

Jon S. Jacobson, Ph.D. University of California, Berkeley, *Professor of History* (European international)

Michael P. Johnson, Ph.D. Stanford University, *Professor Emeritus 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)

Henry Cord Meyer, Ph.D. Yale University, *Professor Emeritus of History* (twentieth-century Europe)

Robert G. Moeller, Ph.D. University of California, Berkeley, *Professor of History* (modern Germany, European women)

Keith L. Nelson, Ph.D. University of California, Berkeley, *Professor of History* (American foreign relations)

Patricia A. O'Brien, Ph.D. Columbia University, *Director of the UC Humanities Research Institute and Professor of History* (modern French social)

Spencer C. Olin, Ph.D. Claremont Graduate School, *Professor of History* (American social and political)

Kenneth L. Pomeranz, Ph.D. Yale University, *Associate Professor of History* (modern Chinese)

Mark S. Poster, Ph.D. New York University, *Professor of History and of Information and Computer Science* (modern European intellectual)

Kathryn Ragsdale, Ph.D. University of Chicago, *Assistant Adjunct Professor* (social and cultural history of modern Japan)

David C. Rankin, Ph.D. The Johns Hopkins University, *Associate Adjunct Professor of History* (American social, African-American)

Jaime E. Rodríguez, Ph.D. University of Texas, *Professor of History* (Latin America, Mexico)

Daniel Schroeter, Ph.D. University of Manchester, *Director of Religious Studies, Associate Professor of History, and Teller Family Chair in Jewish History* (Jewish history, Middle East and North Africa)

Timothy Tackett, Ph.D. Stanford University, *Professor of History* (Old Regime Europe, French Revolution)

Tanis Thorne, Ph.D. University of California, Los Angeles, *Assistant Adjunct Professor of History and Social Ecology*

Heidi Tinsman, Ph.D. Yale University, *Assistant Professor of History*

Steven C. Topik, Ph.D. University of Texas, *Department Chair and Professor of History* (Latin America)

Anne Walthall, Ph.D. University of Chicago, *Professor of History* (early modern and modern Japan)

Jonathan M. Wiener, Ph.D. Harvard University, *Professor of History* (recent American, theory and history)

R. Bin Wong, Ph.D. Harvard University, *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 presents a variety of approaches to history, and each emphasizes basic disciplinary skills: weighing evidence, constructing logical arguments, and exploring the role of theory in historical analysis and human action.

The Department offers a number of lower-division courses open to nonmajors as well as majors, most of which fulfill part of the UCI breadth requirement. The Department requires all majors to take a survey course in world history, United States history, European history, Latin American history, or East Asian 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 social history, political history, international history, intellectual history, social thought, and comparative history. The colloquia are conducted as discussion groups and involve close reading and analysis of secondary texts. The research seminar is a one-quarter seminar in primary materials that culminates in the writing of a research paper.

The faculty encourages History majors and minors to study abroad and experience a different culture while making progress toward their UCI degree. The Center for International Education, which includes the Education Abroad Program (EAP) and the International Opportunities Program (IOP), assists students in taking advantage of the many worldwide opportunities that can provide other perspectives on history. See the Center for International Education section of the *Catalogue* or your academic counselor for additional information.

## CAREERS FOR THE HISTORY MAJOR

The training and discipline derived from historical studies provide a valuable experience for all educated persons seeking to understand themselves and their world. Many students who complete undergraduate degrees in the Department of History go on to graduate school in a variety of fields, including history, law, business, international relations, and teacher education. 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 and Life Planning 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 and Life Planning Center section for additional information.

## REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57–61.

**School Requirements:** See page 190.

### Departmental Requirements for the Major

Fourteen courses are required: a year-long survey selected from world history (History 21A, 21B, 21C), United States history (History 40A, 40B, 40C), European history (History 41A, 41B, 41C), Latin American history (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 (History 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, East Asian, Middle Eastern, North African, or world 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 history courses, 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 world history (History 21A, 21B, 21C), United States history (History 40A, 40B, 40C), European history (History 41A, 41B, 41C), Latin American history (History 42A, 42B, 42C), East Asian history (History 43A, 43B, 43C), or Crises and Revolutions (History 50, three different topics required); 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 curriculum is the Department's course in History and Theory which deals with both theoretical texts and historical studies that have utilized theoretical concepts and models. The course directs attention to the diverse implications of modernity, to the groups who dominated and were dominated by it, and to the costs and benefits of the process. These matters can be studied most satisfactorily by the historian whose theoretical self-consciousness and methodological facility have been systematically and carefully developed.

The colloquium, a reading course that examines a field's chief historical works, enriches the student's knowledge of the main areas of historical research and develops critical reading skills. Colloquium series are offered yearly in American history and modern European history, biannually (depending on demand) in early modern European history, Latin American history, East Asian history, and ancient history, and occasionally in medieval history. A student may prepare a dissertation in any of these fields.

In addition to the History and Theory sequence and the major field colloquia, students also take a proseminar/research seminar sequence during their first year. The proseminar provides an orientation to the literature on a broad historical subject, and the associated seminar offers guidance in research and writing on problems within this broad area. Students awarded M.A. degrees at other institutions before entering the graduate program at UCI may be exempted from this requirement, subject to evaluation of their M.A. theses.

During the second year of study, Ph.D. students normally take a colloquium series in their second field. They also take a two-quarter research seminar where they have an opportunity to work on problems of their own choosing; students who entered the program with an M.A. degree must also take this seminar. In addition, independent reading and research courses are provided for advanced, specialized study in tutorial form.

The immediate objective for the doctoral student is to develop two fields of competence in addition to History and Theory. Competence in the two fields is demonstrated by the satisfactory completion of three courses in each of these areas. A comprehensive oral examination on the student's major field follows fulfillment of all degree requirements. However, those students who elect a second field administered by another program or department (e.g., Critical Theory) must complete requirements, which sometimes include a written examination, for that field. Competence in History and Theory is demonstrated by satisfactory completion of History 200A and 200B. History 200C may be taken as an elective.

The subsequent objective, to write a distinctive dissertation, is of crucial importance. To assist in accomplishing both objectives, the Department offers intensive consultation with the faculty as well as a lively intellectual atmosphere. Students have long shared in the decision-making processes of the Department, which engages the entire historical community at UCI in the collective pursuit of excellence. Students profit also from a vigorous visiting speakers program that brings scholars from other campuses and other nations to meet and interact with UCI students and faculty.

## 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 3.3 (B+) is required for admission, with evidence of better work in history. In addition, all applicants are asked to submit three letters of recommendation and scores from the Graduate Record Examination. An example of written work in history from undergraduate courses is also required. 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: two in History and Theory (History 200A and 200B), three in a colloquium series, three in proseminars (or two in proseminars and one in History 200C), 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 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, aptitude scores from the Graduate Record Examination, and a sample of written work. In addition, 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, these students will be exempted from this requirement. In the second and third years, the greater experience of those who enter with an M.A. may work to advantage in speeding them to the qualifying examination.

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.

**Art History.** A concentration in Art History, leading to the Ph.D. degree in History, is available through the Departments of Art History and History. Information is available in the Department of Art History section of the *Catalogue*.

**Feminist Studies.** A graduate emphasis in Feminist Studies also is available. Refer to the Women's Studies section of the *Catalogue* for information.

**Program of Study.** The Department requires doctoral students to prepare themselves in three different areas:

1. History and Theory.
2. The first field (such as Modern Europe), which is designed as a teaching field as well as the focus of the student's dissertation.
3. The second field (such as American History or Critical Theory), which is designed as a second teaching field.

The courses required in this preparation include the History and Theory sequence, colloquium series in both fields, First-Year Proseminar/Research Seminar sequence, and the Second-Year Research Seminar. The normal academic load is three courses per quarter. However, applicants may be eligible for approved part-time status, which allows students to take a lighter course load at reduced fees for a maximum of two academic years.

Every doctoral student will be assisted by a departmental advisor in the student's general area of study who will be responsible for approving defined fields, guiding the student to consultant faculty, and supervising the examination.

**Language Requirements.** All students, except as specified below, must demonstrate a reading knowledge of two foreign languages prior to taking the Ph.D. candidacy qualifying examination. Competency in a language may be established either by passing a departmental examination 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 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 are expected to write a substantial paper that demonstrates the value of the allied discipline to historical inquiry. The two courses for the second option may not count toward fulfilling the requirement for the second field.

**Qualifying Examination and Dissertation.** In preparation for the oral Qualifying Examination, the student will present to the Ph.D. Candidacy Committee a portfolio of three papers totaling at least 45 pages on subjects related to the major field. Successful completion of this examination results in the student's advancement to Ph.D. candidacy. Within one academic quarter of the oral examination, new candidates must meet in a colloquy with their Doctoral Committee to present their dissertation proposal. Once the Doctoral Committee approves the proposal, the student begins intensive work 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.

**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).** 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)

#### 15 American Ethnic History

**15A Native American History (4).** Introduction to multiple topics: indigenous religious beliefs and sociopolitical organization, stereotypic "images," intermarriage, the fur trade, Native leaders, warfare, and contemporary issues. Formerly History 14. (VII-A)

**15B Introduction to African-American Studies I (4).** An undergraduate survey course. Introduction to the main contours of the African-American experience from the importation of Africans into the Americas to the present time. Focuses on the unique expressions of African-American society and culture. Same as Humanities 51A. (IV, VII-A)

**15C Introduction to Asian American Studies I (4).** Examines and compares the diverse experiences of major Asian American groups since the mid-nineteenth century. Topics include: origins of emigration; the formation and transformation of community; gender and family life; changing roles of Asian Americans in American society. Same as Humanities 60A and Social Sciences 78A. (VII-A)

#### 21 World History

**21A World History: Beginnings to 1650 (4).** Treats major themes of world historical development through the mid-seventeenth century, focusing on the Eurasian world, but with secondary emphasis on Africa and the Americas. (IV, VII-B)

**21B World History: 1650–1870 (4).** Examines three major transformations that made the world of 1870 dramatically different from that of 1650: e.g., the scientific revolution, industrialization, and the formation of modern states and nations. (IV, VII-B)

**21C World History Since 1870 (4).** Considers several major currents of modern history: technological change and its social effects; changes in gender relations; totalitarianism; peasant revolutions and the crisis of colonization; international migration; and ecological problems. (IV, VII-B)

**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 Ancient Society (4). (IV)**

**35B Classical Greece (4). (IV)**

**35C Ancient Rome (4). (IV)**

**40 The Formation of American Society.** An introduction to the social, economic, political, and cultural development of the United States from the fifteenth century to the present. Any one quarter of history 40A, 40B, or 40C satisfies the American History portion of the UC American History and Institutions requirement.

**40A The Formation of American Society: 1492–1790 (4). (IV)**

**40B The Formation of American Society: The Nineteenth Century (4). (IV)**

**40C The Formation of American Society: The Twentieth Century (4). (IV)**

**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 America.** 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). (IV, VII-B)**

**42B Independence and the Nineteenth Century (4). (IV, VII-B)**

**42C Twentieth Century (4). (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). (IV, VII-B)**

**43B Modern China (4). (IV, VII-B)**

**43C Modern Japan (4). (IV, VII-B)**

**50 Crises and Revolutions (4).** Study of turning points in world history, illustrating themes and methods of historical analysis. May be taken for credit three times as topics vary and to satisfy the humanistic inquiry breadth requirement. (IV, VII-B)

**60 Introduction to the History of Science (4).** The emergence of modern science since 1500. 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.

**101 History of the World Economy (4).** Beginning with a discussion of different economic “worlds” of the 1400s, traces the complex processes by which these worlds began to influence each other, ending with the twentieth-century world economy. Topics include imperialism, industrial revolution, migration, slave trade. (VII-B)

**ANCIENT HISTORY**

**105 The Roman Empire.** Creation of a bureaucratic empire; rule by gentry and officers; official culture and rise of Christianity; social conflict and political disintegration.

**105A Early Roman Empire (4).** Formerly History 103A.

**105B Later Roman Empire (4).** Formerly History 103B.

**105C The Classical Tradition (4).** Formerly History 105.

**EUROPEAN HISTORY****110 Medieval Europe**

**110A Europe in the Early Middle Ages (4).** Survey of Europe between 300 A.D. and 900 A.D. Topics include the breakup of the Roman Empire, barbarian invasions, spread of Christianity, rise of Islam, the Carolingian Empire, and the Vikings. (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)

**110D Topics in Medieval Europe (4).** May be repeated for credit as topics vary. Formerly History 118.

**112 Early Modern Europe**

**112A Renaissance Europe (4).** Survey of the Renaissance in Italy and northern Europe. Formerly History 120A.

**112B Reformation Europe (4).** Survey of the Protestant and Catholic Reformations in sixteenth- and seventeenth-century Europe. Formerly History 120B.

**112C Europe of the Old Regime (4).** Survey of the social, cultural, and political history of Europe from the middle of the seventeenth century to the French Revolution. Formerly History 120C. (VII-B)

**112D Topics in Early Modern Europe (4).** Theme-based approach to the main social, political, and cultural developments in Europe between the fifteenth and eighteenth centuries. Topics include Renaissance humanism, Reformation and Counter-Reformation, scientific revolution, court culture and nation building, interactions with non-European peoples, and cities and commerce. May be repeated for credit as topics vary. Formerly History 129. (VII-B)

**114 Topics in Modern European History (4).** Course content changes with instructor. Topics include the Inquisition; science and religion in modern Europe; sex and society in modern Europe; French revolutions; culture in interwar Europe; the Holocaust; the fall of communism in Eastern Europe. May be repeated for credit as topics vary. (VII-B)

**116 Medieval England**

**116A England in the Early Middle Ages (4).** Survey of English history from ca. 400 to ca. 1200. Topics include the Anglo-Saxons, the Viking settlement, the Norman Conquest, the Angevin Empire, and the development of royal, legal, and administrative mechanisms. Formerly History 114A. (VII-B)

**116B Later Medieval England (4).** Survey of English history between ca. 1200 and ca. 1500. Topics include the Magna Carta, the Barons’ War, the Welsh and Scottish wars, the development of Parliament, the Hundred Years’ War, and the Wars of the Roses. Formerly History 114B. (VII-B)

**117 Early Modern England**

**117A Tudor England (4).** Survey of English history from the fifteenth century until the early seventeenth century. Concentrates on the formation of Tudor political, social, and economic institutions. Formerly History 122A. (VII-B)

**117B Stuart England (4).** Survey of English history from the early-seventeenth century until the early-eighteenth century. Concentrates on the causes of the English Revolution and the Revolution itself, the Restoration, and the Protestant ascendancy. Formerly History 122B. (VII-B)

**118 Great Britain**

**118A Modern Britain: 1700 to 1850 (4).** Examines the major developments in British politics, socioeconomic structure, and culture from 1700–1850. The development of the British nation-state and the fashioning of a national identity. Explores basic questions about British national identity. Formerly History 134A. (VII-B)

**118B Modern Britain: 1850 to 1930 (4).** Examines the social, economic, and political history of Britain from 1850–1930. Post-industrialism, urbanization, population and economic change, increased political participation by working classes and women, consolidation of the empire and the breakup of the United Kingdom. Formerly History 134B. (VII-B)

**118C Modern Britain: 1930 to Present (4).** Explores Britain from the Second World War to the resignation of Margaret Thatcher. Examines Britain’s devolution from world power to member of the European Community; transition from a manufacturing to service-based economy; changing demographic and racial composition in light of decolonization. Formerly History 134C. (VII-B)

**120 France.** Emphasis on social, economic, and cultural history of France since the Great Revolution.

**120A Early Modern France: 1500–1774 (4).** Formerly History 124. (VII-B)

**120B The French Revolution and Napoleon: 1774–1815 (4).** Formerly History 135A. (VII-B)

**120C France in the Nineteenth Century (4).** Formerly History 135B. (VII-B)

**120D France in the Twentieth Century: 1914 to Present (4).** Formerly History 135C. (VII-B)

**122 Germany.** Political, social, and economic history from 1815 to the present.

**122A Emergence of the German Nation: 1815–1890 (4).** Formerly History 136A. (VII-B)

**122B From the Kaiserreich to the Third Reich: 1890–1939 (4).** Formerly History 136B. (VII-B)

**122C World War, Cold War, and Reunification: 1939– (4).** Formerly History 136C. (VII-B)

**124 Russia.** Political and social developments from traditional Russia to the present Soviet society.

**124A Imperial Russia: 1689–1905 (4).** Formerly History 137A. (VII-B)

**124B Twentieth-Century Russia (4).** Formerly History 137B. (VII-B)

**126 European International History.** Europe and world politics; the wars and diplomacy of the major powers.

**126A Europe in World Crises: 1900–1939 (4).** Formerly History 133B. (VII-B)

**126B The Second World War (4).** Formerly History 133C. (VII-B)

**126C Europe, the Cold War, and the Superpowers: 1945– (4).** Formerly History 133D. (VII-B)

**127 European Cultural and Intellectual History.** Main currents of Western thought, emphasizing English, French, and German thinkers.

**127A Enlightenment Europe (4).** Formerly History 132A. (VII-B)

**127B Hegel to Nietzsche (4).** Formerly History 132B. (VII-B)

**127C Freud to Sartre (4).** Formerly History 132C. (VII-B)

**127D Contemporary European Thought (4)**

**128 Topics in the History of Women in Europe (4).** May be repeated for credit as topics vary. Same as Women’s Studies 171F. Formerly History 130D, 130E. (VII-B)

**130 Jewish History**

**130A Jewish History, Ancient to Early Modern Times (4).** The history of the Jewish people from their origins in the ancient world to the 1700s. Social, religious, and intellectual life of Jewish communities in the Middle East, North Africa, and Europe. Formerly History 108A. (VII-B)

**130B Modern Jewish History (4).** History of the Jews in Europe, the Middle East, North Africa, and the United States from the early-eighteenth century to recent times. Emancipation, assimilation, religious reform, antisemitism, Zionism, socialism, the Holocaust, and modern Israel are the major themes. Formerly History 108B. (VII-B)

**135 History of Science and Medicine**

**135A The Scientific Revolution (4).** An examination of early modern European science from 1500 to 1700. Includes readings from central figures (Copernicus, Harvey, Bacon, Descartes, et al.); themes include the impact of printing, humanism, patronage, technology, and discussion of the term "revolution" in this context. (IV)

**135B Science and Religion (4).** Historical analysis of two episodes in the interaction between science and religion in the West: Galileo's defense of heliocentrism and Darwin's theory of evolution. Emphasizes historical context for each case and changes in definitions of science, religion, and their relationship. (IV)

**135C Exploring the Cosmos (4).** After briefly considering the invention of astronomy in antiquity and the Copernican revolution, examines the development of solar science; the triumph of the view of the expanding universe; and a medley of themes in post-1945 astrophysics and cosmology. (IV)

**135D Science and the Environment (4).** Science and ideas about ecology, the exploitation of natural resources, and the protection of nature since the Enlightenment. (IV)

**135E The Making of Modern Medicine (4).** Examination of medical care in Britain from the 1660 plague to establishment of the National Health Service Act in 1946. Structured around meanings of health and disease, the organization of medicine, and the politics of health care. (IV)

**135F Topics in the History of Science and Medicine (4).** May be repeated for credit as topics vary. Formerly History 186. (IV)

**139 History and Prose Composition (4) Summer.** Requires at least 4,000 words of assigned composition based upon historical works. History majors are given admission priority. Prerequisites: satisfaction of the lower-division writing requirement; junior standing or consent of instructor. May be repeated for credit as topics vary.

**AMERICAN HISTORY**

**140 The Development of the American Nation.** Growth of a distinctively American society out of the colonial heritage, with emphasis on social and economic bases of culture and politics, sectionalism, industrialization, and the United States as a world power.

**140A Early America: 1492–1740 (4).** Examines the history of the land that became the first 13 states of the United States, from early attempts at exploration and discovery to the economic growth and demographic heterogeneity that marked the white settlements of the early 1700s.

**140B Revolutionary America: 1740–1790 (4).** An exploration of why 13 continental colonies, whose commercial and cultural connections with Britain far exceed their interaction with one another, resisted imperial reform after 1763 to the point of war in 1775 and independence the following year.

**140C Coming of the Civil War (4).** Investigates the social, political, economic, cultural, and constitutional changes that transformed antebellum America and culminated in civil war.

**140D Civil War and Reconstruction (4).** Focuses upon the social, economic, political, cultural, and constitutional changes that transformed the United States during the Civil War era.

**140E The Cold War and After (4).** Explores topics in gender, race, and class in American history since 1945, considering politics and popular culture, domestic issues, and foreign policy. Topics include McCarthyism and the civil rights, anti-war, and feminist movements.

**142 American Social and Economic History**

**142A California in Modern America (4).** California as a case study of national trends and as a unique setting: its specific problems and culture. Major themes include: colonization, immigration, race relations, agricultural development, industrialization, urbanization, working class movements, social conflict, and political reform. Formerly History 142C.

**142B Topics in American Social and Economic History (4).** May be repeated for credit as topics vary.

**144 American Intellectual and Cultural History**

**144A Early American Cultural and Intellectual History (4).** Examination of ideas and culture during the early American period, with emphasis on the relationship of ideas to their social, political contexts. From contact to Puritanism to the Revolutionary era, with attention to constructions of class, race, gender.

**144B Nineteenth-Century American Cultural and Intellectual History (4).** Topics include religious revivals; antislavery thought; theories of the body; Transcendentalism; feminism and suffrage; the meanings of the Civil War; corporatism; realism; forms of racism and nativism.

**144C Twentieth-Century American Cultural and Intellectual History (4).** Topics include modernism and anti-modernism; Pragmatism; the Harlem Renaissance; theories of sexuality; mass culture and consumer culture; the rise of social science; Marxism; McCarthyism; the civil rights movement; the New Left; feminism, postmodernism.

**144D Religion and Society in the United States (4).** An examination of major issues in the study of relationships between religion and society in American history, focusing on the ways in which religious institutions and ideas have influenced, and been influenced by, significant developments in American life. Formerly History 148A, 148B.

**144E Racial Thought in America (4).** An examination of the development, significance, and persistence of racism in American society. Looking mainly at white racial ideas, considers some of the major historical approaches to understanding their origin, character, and role in American life.

**144F Utopian Experiments in American History (4).** Focus on the cooperative dimension of the American experience; the large number of intentional experiments in community living and alternative lifestyles in the nineteenth and twentieth centuries. Examination of both the ideological foundations of communitarianism and specific historical case studies. Formerly History 142B.

**144G Topics in American Cultural and Intellectual History (4).** May be repeated for credit as topics vary.

**145 American Working-Class History (4).** Traces formation of the American working-class and examines its response to the changing structures of economic/political power determined by nineteenth-century industrial capitalism and twentieth-century imperialism. Issues/intersections of race, culture, and gender are examined.

**146 Women and Gender Relations in the United States.** An examination of changes in gender relations and in the conditions of women's lives from the 1700s on. Emphasis on race and class, cultural images of women and men, sexuality, economic power, and political and legal status. Same as Women's Studies 171A, 171B, 171C.

**146A American Women to 1820 (4).** (VII-A). Formerly History 150A.

**146B United States Women: 1820–1980 (4).** (VII-A). Formerly History 150B.

**146C Topics in Women and Gender Relations in the United States (4).** May be repeated for credit as topics vary. (VII-A)

**148 Multicultural United States History**

**148A Law and Minorities in the United States (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. Formerly History 152C. (VII-A)

**148B Topics in Multicultural U.S. History (4).** Examines the variety of cultural expressions through which the people who came to inhabit the United States historically signify their collective identities. May be repeated for credit as topics vary. (VII-A)

**150 Topics in African-American History (4).** May be repeated for credit as topics vary. (VII-A)

**151 Chicana/Chicano History**

**151A Chicana/Chicano History: Pre-Colonial to 1900 (4).** Examines social history of the southwest region from antiquity to 1900. Discusses major questions, theory and research methods pertinent to Chicanas/Chicanos. Themes include: indigenous empires, conquest, colonialism, social stratification, ideology, marriage, sexuality, industrial capitalism, accommodation and resistance. (VII-A)

**151B Chicana/Chicano History: Twentieth Century (4).** Examines social history of the Southwest with emphasis on Mexican-origin people. Discusses major questions, theory and research methods pertinent to Chicana/Chicano history. Themes explored include: immigration, xenophobia, class struggle, leadership, generational cohorts, unionization, education, barrioization, ethnicity, patriarchy, sexuality. History 151B and Social Sciences 173F may not both be taken for credit. (VII-A)

**152 Topics in Asian-American History (4).** Introduction to important themes in the history of people of Asian ancestry in the United States from the nineteenth century to the present. May be repeated for credit as topics vary. Formerly History 152D. (VII-A)

**153 American Legal History (4).** Introduction to American legal case materials, to legal categories and ways of thinking, and to selected topics in U.S. legal history. Does *not* offer a chronological survey of the development of law in the United States. Formerly History 187.

**154 American Urban History (4).** A study of urban communities in the United States, from colonial times to the present. Traces the impact of industrialization and urbanization on social and cultural life and investigates the significance of urban life for U.S. democratic culture.

#### 158 History of American Foreign Relations

**158A The Rise and Fall of U.S. Power (4).** Deals with relations between the U.S. and the remainder of the world since 1940, with attention to U.S. "cold war" and "detente" with the communist powers, the growing ties with European and Asian allies, the continuing impact on less-developed nations. Formerly History 146B. (VII-B)

**158B Imperialism in American History (4).** The focus: to what extent has the U.S. been imperialistic in its relations with other countries and peoples. Examines the causes and effects of American behavior toward less powerful nations, from early dealings with our neighbors to twentieth-century interventions. Formerly History 146C. (VII-B)

**158C America and the Third World (4).** Introduction to the mounting problems of the underdeveloped, or "Third" World: population pressure, hunger, exploitation, ethnic struggle, political instability. Attention to the ways in which the industrialized "North" and, particularly, the United States affect and are affected by these difficulties. Formerly History 146D. (VII-B)

#### LATIN AMERICAN HISTORY

##### 161 Mexico

**161A Indian and Colonial Societies in Mexico (4).** Examines the history of Colonial Mexico from prehistoric times to the eighteenth century. Focuses on the social, economic, and political evolution of the new Mexican society which resulted from the "meeting" of two cultures. (VII-B)

**161B Nineteenth-Century Mexico (4).** Examines the history of Mexico in the nineteenth century. Focuses on the social, economic, political, and cultural transformation of Mexico in the last century. (VII-B)

**161C Twentieth-Century Mexico (4).** Examines the history of contemporary Mexico beginning with the Mexican Revolution and concluding with the present administration. Social, economic, and political effects of the Revolution; formation of a "one-party democracy"; economic transformation of the nation; the present crisis. (VII-B)

**162 Brazil (4).** Overview of social, economic, and political developments since 1500.

**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 (4).** May be repeated for credit as topics vary. (VII-B)

#### ASIAN HISTORY

##### 170 China

**170A Chinese History to 1800 (4).** A survey of the history of China to 1800. Formerly History 172A. (VII-B)

**170B Chinese History: 1800-1949 (4).** An examination of Chinese society and thought from the late-eighteenth century to the 1949 revolution. Focuses on the role of intellectuals; popular culture; women in Chinese society; developments in commerce and urban life; rebellion; foreign imperialism. Formerly History 172B. (VII-B)

**170C Chinese History: 1949-Present (4).** A discussion of major themes in the social, cultural, political, economic and intellectual history of China since the founding of the People's Republic in 1949. Emphases will vary from year to year. Formerly History 172B. (VII-B)

##### 171 Japan

**171A Japanese History to 1868 (4).** Topics include the simultaneous elaboration of a civilian aristocratic tradition and the military ethos, the conflict between martial and economic values in the context of an expanding economy, and the development of Japan's indigenous religions, art, and literature. Formerly History 174A. (VII-B)

**171B Japanese History: 1868-1945 (4).** Topics in the rise of modern Japan include the relationship between centralization and imperialism, democracy and fascism, industrialization and feminism in the context of the complex and competing forces that shaped Japan's experience in the modern world. Formerly History 174B. (VII-B)

**171C Japanese History Since 1945 (4).** From the ashes of defeat to economic superpower, from poverty to material consumerism, from the ethic of diligence and fortitude to hedonism. Addresses what these changes have meant for ordinary people, as well as government policy and Japan's international position. (VII-B)

**172 Topics in Asian History (4).** May be repeated for credit as topics vary. Formerly History 176, 177. (VII-B)

**173 Topics in the Social History of Asia (4).** Topics include the history of the family, changing expectation of men and women, changes in patterns of work urbanization, and leisure, often with a strong comparative focus across different Asian societies. May be repeated for credit as topics vary. (VII-B)

**174 Topics in the Cultural History of Asia (4).** Topics include the development of popular religion; changes in the relationships between personal, communal, and national identities; and the significance of new cultural media (print, TV, others). Perspective may be either comparative across nations or may focus on one nation. May be repeated for credit as topics vary. (VII-B)

**175 Topics in the Political-Economic History of Asia (4).** Topics include state formation, economic development, conflicts over participation and representation, and class relations, often with a strong comparative focus. May be repeated for credit as topics vary. (VII-B)

#### AFRICAN AND MIDDLE EASTERN HISTORY

**177 Israel and Palestine (4).** Origins of Zionism in the nineteenth century, Arab-Jewish conflict in Palestine, emergence of Palestinian nationalism, the formation of the Israeli nation after 1948, and the development of the Palestinian movement. Focus on Palestinian and Israeli society and culture. Formerly History 108C. (VII-B)

**178 Modern Middle East and North Africa (4).** A survey of the history of the Middle East and North Africa from the Ottoman period to the present day. Examination of the Ottoman Empire and the impact of the West, imperialism and colonialism, nationalism, and independence of the Arab states, Turkey, and Iran. Formerly History 179. (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).** Same as Women's Studies 171G when topic is appropriate. May be repeated for credit as topics vary.

**181 Special Studies in Economic History (4)**

**182 Special Studies in Intellectual-Cultural History (4)**

**183 Special Studies in International History (4)**

**184 Special Studies in Comparative History (4)**

**185 Special Studies in Social Theory (4)**

#### HISTORICAL RESEARCH FOR HISTORY MAJORS

**190 Colloquium (4).** Specialized courses dealing primarily with close reading and analysis of 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. May be repeated for credit as topics vary. Same as Women's Studies 171D when topic is appropriate.

**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. Same as Women's Studies 171E when topic is appropriate.

**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 Humanities 220 (Literary Theory) and Humanities 270 (Advanced Critical Theory) to be of interest.

### HISTORY AND THEORY

**200A, B, C History and Theory (4, 4, 4) F, W, S.** Introduction to role of theory in historical writing, focusing on several major theorists, their relation to their setting, the structure of their thought, and its application to significant historical issues. Completion of History 200A and 200B is required for all History graduate students. History 200C is optional. Same as Humanities 200A, B, C.

**202 Proseminar (4).** Topical courses devoted to the literature of a broad historical subject, e.g., the absolutist state, the French Revolution, comparative industrialization, women's history. May be repeated for credit as topics vary.

**203 First-Year Research Seminar (4).** Course devoted to research and writing on questions connected with proseminar topics. Normally required of all entering graduate students. Includes review of the current state of the literature and practical experience in conducting research and writing a research paper. Prerequisite: History 202.

**204A-B Second-Year Research Seminar (4-4).** Two-quarter sequence required of all Ph.D. students. Normally taken during the second year of the Ph.D. program; not required for M.A. students. Includes review of the current state of the literature and practical experience in conducting research and writing a research paper.

### 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. Not offered every year.

**220 The Literature and Interpretations of Early-Modern Europe.** Not offered every year.

**220A Society and Economy (4)**

**220B Political History (4)**

**220C Intellectual and Cultural History (4)**

**230 The Literature and Interpretations of Modern European History.**

**230A Britain (4)**

**230B France (4)**

**230C Germany (4)**

**230D Russia (4)**

**230E Comparative Topics (4).** May be repeated for credit as topics vary.

**250 The Literature and Interpretations of Latin American History.** Not offered every year.

**250A Colonial Period (4)**

**250B Nineteenth Century (4)**

**250C Twentieth Century (4)**

**260 The Literature and Interpretations of American History**

**260A Seventeenth and Eighteenth Centuries (4)**

**260B Nineteenth Century (4)**

**260C Twentieth Century (4)**

**270 The Literature and Interpretations of East Asian History.** Not offered every year.

**270A Early East Asia (4)**

**270B China Since 1600 (4)**

**270C Japan Since 1600 (4)**

**280A, B, C Seminar in Southern History (4, 4, 4).** 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 and San Diego campuses. May be used to fulfill the First-Year Research Seminar requirement. Prerequisite: UCI participants must obtain consent of one of the UCI instructors. Not offered every year.

**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. Prerequisite for 284C: 284A and 284B. Not offered every year.

### SPECIAL STUDIES

**290 Special Topics (4) F, W, S.** Lectures, readings, and discussion on subjects more limited in scope than those included in the year-long colloquium series. May be repeated for credit as topics vary.

**291 Directed Reading (4 to 12) F, W, S.** Reading courses focused on specialized topics. Prerequisite: consent of instructor.

**295 Special Methods (4).** Development of particular research skills.

**298 Experimental Group Study (4).** Open to four or more students. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

**299 Dissertation Research (4 to 12) F, W, S.** Specifically designed for students researching and writing their dissertations. Prerequisite: consent of instructor; advancement to Ph.D. candidacy.

**399 University Teaching (4) F, W, S.** Required of and limited to Teaching Assistants and Teaching Associates. May be repeated for credit.

## SPECIAL PROGRAMS

### 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); Italian Society and Culture. 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 (40–50 pages) 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.

## Interdisciplinary Minors

A variety of interdisciplinary minors are available to all UCI students. A brief description of each program follows; detailed information is included in the Interdisciplinary Studies section of the *Catalogue*.

**The minor in African-American Studies** is an interdisciplinary program which offers undergraduate students an opportunity to study those societies and cultures established by the people of the African diaspora and to investigate the African-American experience from a variety of disciplinary perspectives and theoretical approaches.

**The minor in Asian American Studies** is an interdisciplinary curriculum which examines the historical and contemporary experiences of Asians after their arrival in the United States and seeks to provide an awareness of the history, culture (e.g., literary and creative art accomplishments), psychology, and social organization of Asian American communities.

**The minor in Chicano/Latino Studies** is an interdisciplinary curriculum designed to provide an awareness, knowledge, and appreciation of the language, history, culture, literature, sociology, anthropology, politics, social ecology, health, medicine, and creative (art, dance, film, drama, music) accomplishments in the Chicano/Latino communities.

**The minor in Global Peace and Conflict Studies** is an interdisciplinary curriculum which addresses the problem of international violence; the threat of global war; and paths to world-wide cooperation in building a secure, prosperous, and democratic future.

**The minor in Global Sustainability** trains students to understand the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on this planet.

**The minor in the History and Philosophy of Science** explores how science is actually done and how it has influenced history, and is concerned with determining what science and mathematics are, accounting for their apparent successes, and resolving problems of philosophical interest that arise in the sciences.

**The minor in Latin American Studies** is an interdisciplinary curriculum designed to develop in students an awareness, knowledge, and appreciation of Latin American issues in the areas of language, history, culture, literary studies, sociology, anthropology, political science, health, folk medicine, and creative (art, dance, film, drama, music) accomplishments.

**The minor in Native American Studies** focuses on history, culture, religion, and the environment. The three core courses serve as an introduction to the Native American experience from the perspective of different historical periods and frameworks of analysis.

**The minor in Religious Studies** focuses on the comparative study of religions in various cultural settings around the world and seeks to provide a wide-ranging academic understanding and knowledge of the religious experience in society.

**The minor in Women's Studies** offers a curriculum drawing from the humanities, social sciences, and the arts to examine contributions of women from different backgrounds to culture and society and to explore women's and men's lives in the context of changing gender relations.

## Concentration in Medieval Studies

322H Humanities Hall; (714) 824-6086  
Dayle Seidenspinner-Núñez, *Coordinator*

The concentration in Medieval Studies allows undergraduate students in the Schools of Humanities and the Arts to augment their major by completing a coherent program of courses in the area of medieval studies. The concentration is available to students in any major offered by the Schools and is particularly well-suited to majors in English and Comparative Literature, History, Philosophy, and the Arts.

Students in the concentration must complete at least two quarters of Humanities 110, the Core Course in Medieval Studies. These courses are interdisciplinary, 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.

## 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.

## English as a Second Language Program

601 Humanities Trailer Complex; (714) 824-6524

Robin Scarcella, Ph.D. University of Southern California, *Director of the English as a Second Language Program and Associate Professor of Humanities* (linguistics, bilingual emphasis)

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. Students 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.

**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 non-verbal 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 to 2).** Directed and individualized work in English as a second language not covered in the Humanities 20, 21, 22 sequence. Pass/Not Pass Only. Prerequisite: consent of ESL Director.

## 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 is approved to complete 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. (1A-B-C: I, IV; 1C: VII-A)

**Humanities 5A World Religions I (4).** An introduction to the history, doctrine, culture, and writing of the three "religions of Abraham": Judaism, Christianity, and Islam. (IV, VII-B)

**Humanities 5B World Religions II (4).** An introduction to various religious traditions in selected areas of the world—including India, East Asia, Africa, the Americas, or elsewhere. Attention to the expressions, teachings, culture, and history of selected religious groups. (IV, VII-B)

**Humanities 5C World Religions III (4).** An examination of various aspects of religious expression, including symbolization of the sacred, collective religious behavior, and religious dissent. (IV)

**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. *Not offered 1996-97.*

**Humanities 30 Latin America and the Caribbean: An Introduction (4).** A foundational course in Latin American and Caribbean Studies that introduces students to the social, cultural, economic, and political processes which have circumscribed the insertion of this region into the world economy from the Pre-Conquest period until the present. (VII-B)

**Humanities 51A Introduction to African-American Studies I (4).** An undergraduate survey course. Introduction to the main contours of the African-American experience from the importation of Africans into the Americas to the present time. Focuses on the unique expressions of African-American society and culture. Same as History 15B. Formerly Humanities 51. (IV, VII-A)

**Humanities 51B Introduction to African-American Studies II (4).** Focuses on the development, significance, and persistence of racial ideas in American thought. Looking mainly at white racial thinking, examines some of the major issues that have emerged. Formerly Social Sciences 51B. (IV, VII-A)

**Humanities 51C Introduction to African-American Studies III (4).** Surveys a variety of academic discourses in the theories of race and "blackness." Formerly Social Sciences 51C. (IV, VII-A)

**Humanities 60A Introduction to Asian American Studies I (4).** Examines and compares the diverse experiences of major Asian American groups since the mid-nineteenth century. Topics include: origins of emigration; the formation and transformation of community; gender and family life; changing roles of Asian Americans in American society. Same as History 15C and Social Sciences 78A. (VII-A)

**Humanities 60B Introduction to Asian American Studies II (4).** Examines the renewal of Asian immigration following World War II. Focuses on domestic and international conditions influencing the liberalization of U.S. immigration laws, and the impact of contemporary Asian immigration on the U.S. political economy and social order. Same as Social Sciences 78B. (VII-A)

**Humanities 60C Introduction to Asian American Studies III (4).** Examines selected substantive, methodological, and/or theoretical issues in Asian American Studies. Possible topics include interracial dating and marriage, electoral politics, educational and occupational achievement, participant community research, uses of oral history, underrepresented Asian American ethnic groups, and diasporic studies. Prerequisites: Humanities 60A and 60B. Same as Social Sciences 78C. (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. *Not offered 1996-97.*

**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 1990s. Includes career and life options, graduate and professional schools, overview of skills, insights and advantages of humanities education. Pass/Not Pass Only. *Not offered 1996-97.*

### UPPER-DIVISION COURSES

**Humanities 105A-B Senior Seminar in Religious Studies (2-2).** A seminar for students completing the Religious Studies minor. **105A:** Research techniques and preparation for the senior paper; discussion of topics. In-progress grading. **105B:** Independent study with the advice of a faculty member and the instructor of Humanities 105A, leading to a research paper to be submitted to the Religious Studies Committee in the School of Humanities.

**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. Same as English and Comparative Literature CL 104 and Art History 114 when topic is appropriate.

**Humanities H120 Honors Proseminar (4) F, W, S.** Interdisciplinary Honors courses organized each year around a single topic or problem designed to compare and contrast modes of analysis in history, literary studies, and philosophy. Required of participants in the Humanities Honors Program. Prerequisites: consent of instructor and the Humanities Honors Program Committee. May be taken three times for credit as topics vary.

**Humanities H140 Senior Honors Seminar (4) F.** Directed by the Humanities Honors Thesis Advisor and required of students in the Humanities Honors program and Humanities majors in the Campuswide Honors Program. Designed to facilitate the exchange of ideas and research strategies among Honors students and to begin the process of writing the senior honors thesis. Prerequisites: senior standing and consent of the Honors Program Committee.

**Humanities H141 Senior Honors Thesis (4) W.** Directed independent research required of participants in the Humanities Honors Program and Humanities majors in the Campuswide Honors Program. Prerequisites: Humanities H140; consent of Honors Program Committee.

**Humanities H142 Senior Honors Colloquium (4) S.** Completion, presentation, and discussion of Senior Honors Theses. Satisfies upper-division writing requirement. Prerequisites: Humanities H141 and consent of Humanities Honors Program Committee.

**Humanities 150 Topics in African-American Studies (4).** Examines in detail the history, culture, and discourses produced by the people of the African diaspora in the Americas. May be taken for credit four times as topics vary.

**Humanities 181A-B Senior Seminar on Peace and Conflict I, II (2-4) F, W.** Students attend weekly seminar to discuss current global issues in conflict, cooperation, and peace. Weekly attendance at GPACS Forum required. Seminar is used to analyze Forum presentations and to prepare senior research paper. **181A:** Prepare bibliography. **181B:** Prepare research proposal. Seniors only. Same as Social Science 184A-B and Social Ecology 185A-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. Seniors only. Same as Social Science 184C and Social Ecology 185C.

**Humanities 197 Individual Field Study (varying credit) F, W, S.** Individually arranged field study. Prerequisite: consent of instructor.

**Humanities 198 Directed Group Study (1 to 4) F, W, S.** Directed group study on special topics. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

**Humanities 199 Directed Research (1 to 4) F, W, S.** Directed research for senior Humanities students. Prerequisite: senior standing and consent of instructor. May be repeated for credit as topics vary.

## 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. 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

200 Humanities Office Building; (714) 824-6712  
Alexander Gelley, **Director**

### Committee on Critical Theory

Harold Baker, *Assistant Professor of Russian*  
Stephen Barker, *Associate Dean of the School of the Arts, Director of Arts Interdisciplinary, Department Chair (Acting) of Studio Art, and Associate Professor of Drama*  
Lindon W. Barrett, *Assistant Professor of English*  
Marjorie A. Beale, *Assistant Professor of History*  
Homer Obed Brown, *Professor of English*  
Ellen Burt, *Associate Professor of French*  
David Carroll, *Professor of French*  
Chungmoo Choi, *Associate Professor of Korean Culture*  
Rey Chow, *Professor of Comparative Literature*  
Michael Clark, *Professor of English*  
Lucia Guerra-Cunningham, *Professor of Spanish*  
Jacques Derrida, *Professor of Comparative Literature and French*  
Anne Friedberg, *Associate Professor of Film Studies*  
Suzanne Gearhart, *Professor of French*  
Alexander Gelley, *Director of the Emphasis in Critical Theory and Professor of Comparative Literature*  
Wolfgang Iser, *Professor of English*  
Murray Krieger, *University Research Professor of English*  
Julia Reinhard Lupton, *Associate Professor of Comparative Literature*  
Juliet Flower MacCannell, *Professor Emerita of Comparative Literature*  
Steven Mailloux, *Associate Dean of Humanities, Graduate Study, and Professor of English*  
Lillian Manzor-Coats, *Associate Professor of Comparative Literature*  
David McDonald, *Associate Professor of Drama*  
Liisa Malkki, *Assistant Professor of Anthropology*  
J. Hillis Miller, *UCI Distinguished Professor of English and Comparative Literature*  
Gonzalo Navajas, *Professor of Spanish*  
Jane Newman, *Associate Professor of Comparative Literature*  
Margo Norris, *Professor of English and Comparative Literature*  
Mark Poster, *Professor of History and of Information and Computer Science*  
Leslie Rabine, *Professor of French*  
Gabriele Schwab, *Professor of English and Comparative Literature*  
David W. Smith, *Professor of Philosophy*  
John H. Smith, *Associate Professor of German*  
Brook Thomas, *Department Chair of English and Professor of English*  
Juan Villegas, *Research Professor of Spanish*  
Andrzej Warminski, *Professor of Comparative Literature*  
Linda Williams, *Director of the Program in Film Studies and Professor of 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. Ph.D. students may, with Committee approval, complete the emphasis in addition to the degree requirements of their graduate program. Although there is no change in the existing Ph.D. program requirements or procedures, if the student wishes to have a letter (signed by the Dean and by the Director of Critical Theory) testifying that the student has satisfactorily added this theoretical dimension to the graduate program, then additional requirements must be met. Critical theory at UCI is understood in the broad sense as the study of the shared assumptions, problems, and commitments of the various discourses in the humanities. The faculty regards critical theory not as an adjunct to the study of one of the traditional humanistic disciplines but as a necessary context for the study of any humanistic discipline.

Requirements for the emphasis are: a three-quarter Critical Theory Workshop, three Humanities 270 courses offered under the supervision of the Committee on Critical Theory, participation in two mini-seminars (six to eight hours) offered by visiting scholars and sponsored by the Committee, and a research paper written under the guidance of a three-member committee selected by each individual student in consultation with the Director.

## Emphasis in the History and Philosophy of Science

220 Humanities Office Building 2; (714) 824-6565  
Brian Skyrms, **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. It provides a means for doctoral students to supplement their general studies in history and philosophy with specific studies directed toward the natural and social sciences. It also allows history of science and philosophy of science students to broaden their knowledge of each other's fields.

The history of science encompasses such topics as how science is actually done and how it has been influenced by and has influenced other aspects of culture. The history of science has recently proven a very active and influential field of historical research. It has changed many assumptions about science and mathematics in a way that has deeply influenced the philosophy of science and has arguably influenced the practices of the sciences themselves.

The philosophy of science includes such topics as the nature of scientific explanation, the role of logic and language in science and mathematics, the problems inherent in inductive or ampliative inference, the cognitive and epistemic status of scientific laws and theories, and the nature of empirical evidence and its role in theory construction. Students in the emphasis study various ways to assess the epistemological foundations of scientific and mathematical inquiry, account for the apparent successes of the sciences, and resolve problems of philosophical interest that arise within the context of particular sciences.

Students are required to take three graduate-level courses in the history of science and three in the philosophy of science, as well as fulfill special 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 and are designed for all graduate students in the School of Humanities.

Humanities 200 and 220 introduce study in various disciplinary areas, either to students planning a degree in history or one of the

literature departments or to those seeking familiarity with disciplines other than their own.

**Humanities 200A, B, C History and Theory (4, 4, 4) F, W, S.** Introduction to role of theory in historical writing, focusing on several major theorists, their relation to their setting, the structure of their thought, and its application to significant historical issues. Same as History 200A, B, C.

**Humanities 220A, B, C Studies in Literary Theory and Its History (4, 4, 4) F, W, S.** Introduction to criticism and aesthetics for beginning graduate students. Readings from continental, English, and American theorists. Restricted to graduate students only. Same as English and Comparative Literature CR 220A, B, C.

**Humanities 240 Approaches to Film Theory (4) F.** An introduction to the basic texts, concepts, and problems of film theory, stressing concerns such as film spectatorship, cinematic realism, the nature of the gaze, the filmic apparatus, and mass culture. Course offered alternately with classical or contemporary emphasis. May be repeated for credit as topics vary.

**Humanities 245 Problems in Film Analysis (4) W.** Analytical approaches to film-related questions, centering on both specific films and theoretical readings, stressing textual, contextual, and intertextual considerations. May be repeated for credit as topics vary.

**Humanities 250 Advanced Film Theory and Analysis (4) S.** Advanced seminars on various topics, oriented around theoretical paradigms and analytical applications. Prerequisite: Humanities 240 or 245. May be repeated for credit as topics vary.

**Humanities 260A-B-C Critical Theory Workshop (4) F, W, S.** A year-long Critical Theory Workshop, conducted by a team of instructors, conceived as a reading group, and developed with the input of all participants, where significant texts are discussed and analyzed in class. In-progress, Satisfactory/Unsatisfactory grading only.

**Humanities 270 Advanced Critical Theory (4) F, W, S.** Seminars on various topics in critical theory. Students should have taken introductory courses before enrolling in these seminars.

**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) F, W, S.** Required of and limited to Teaching Associates in the Humanities Core Course. Satisfactory/Unsatisfactory only. May be repeated for credit as topics vary.

## DEPARTMENT OF PHILOSOPHY

220 Humanities Office Building II; (714) 824-6525

Gerasimos Santas, **Department Chair**

### Faculty

Jeffrey Barrett, Ph.D. Columbia University, *Assistant Professor of Philosophy* (philosophy of science, philosophy of physics)

Ermanno Bencivenga, Ph.D. University of Toronto, *Professor of Philosophy* (logic, history of philosophy, philosophy of language)

Andrew Cross, Ph.D. University of California, Berkeley, *Assistant Professor of Philosophy* (nineteenth- and twentieth-century continental philosophy and ethics)

Lara Denis, Ph.D. Cornell University, *Assistant Professor of Philosophy* (ethics, Kant)

J. Karel Lambert, Ph.D. Michigan State University, *Professor Emeritus of Philosophy* (logic, philosophy of science, metaphysics)

Penelope Maddy, Ph.D. Princeton University, *Professor of Philosophy and of Mathematics* (logic, philosophy and foundations of mathematics)

Alan Nelson, Ph.D. University of Illinois at Chicago, *Associate Professor of Philosophy* (history of philosophy, philosophy of science)

Terence D. Parsons, Ph.D. Stanford University, *Professor of Philosophy* (metaphysics, philosophy of language)

Nelson C. Pike, Ph.D. Harvard University, *Professor Emeritus of Philosophy* (philosophy of religion, history of philosophy)

Gerasimos Santas, Ph.D. Cornell University, *Department Chair and Professor of Philosophy* (ancient philosophy, history of philosophy, ethics)

Martin Schwab, Ph.D. University of Bielefeld, *Associate Professor of Philosophy and of Comparative Literature* (aesthetics, philosophy of mind)

Brian Skyrms, Ph.D. University of Pittsburgh, *Director of the Emphasis and Minor in the History and Philosophy of Science and 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, *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*

Jacques Derrida, Doctorate d'Etat ès Lettres, *Professor of French, Comparative Literature, and Philosophy* (philosophy, critical theory)

Matthew D. Foreman, Ph.D. University of California, Berkeley, *Professor of Mathematics and of Philosophy*

Gordon G. Globus, M.D. Tufts University, *Professor Emeritus of Psychiatry and Human Behavior*

Donald Hoffman, Ph.D. Massachusetts Institute of Technology, *Professor of Psychology and of Information and Computer Science*

Ruth Barcan Marcus, Ph.D. Yale University, *Visiting Professor of Philosophy*  
Roger N. Walsh, M.B.B.S., Ph.D. University of Queensland, *Professor of Psychiatry and Human Behavior, Philosophy, and Anthropology*

Philosophy addresses itself to questions that arise insistently in every area of human experience and in every discipline within the university. Each discipline inevitably poses problems concerning the nature of the standards appropriate to it and the place of its subject matter within the total framework of human knowledge. If we are to understand science or art or literature, or such human practices as religion and moral thought, we are bound to address ourselves to philosophical issues relating to their nature, the uses of reason appropriate to them, and the contributions they make to our understanding and appreciation of ourselves and the world in which we live.

### CAREERS FOR THE PHILOSOPHY MAJOR

The study of argument and the precision and clarity of thought and writing required of Philosophy majors are excellent preparation for a variety of careers. Many undergraduates trained in Philosophy go on to professional schools in medicine, business, or law. The analytical skills developed in Philosophy courses are especially useful in legal education; indeed, many UCI Philosophy graduates have been successful at top law schools. Former Philosophy students have also used their skills to advantage in careers in government, business, teaching, law enforcement, and computer programming. Many Philosophy majors also continue their education at the graduate level, either in philosophy or a related discipline.

The Career and Life Planning 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 and Life Planning Center section for additional information.

### Undergraduate Program

Instruction in philosophy relies essentially upon discussion in which students are active participants. Wherever possible, therefore, classes are severely limited in size in order to permit sustained interchanges between students and instructor.

Some of the courses offered are of general interest to all students. Others are designed to explore issues that arise in selected and special disciplines such as art or science. The undergraduate advisor should be consulted for advice about courses best suited to the specialized needs of particular students.

The program of course offerings is also designed for those 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 57–61.

**School Requirements:** See page 190.

### Departmental Requirements for the Major

Philosophy 30A-B, 10, 12, and either 11 or 13; Philosophy 101, 102, 103, and five additional quarter courses from Philosophy 100, 105–199. Students planning to go on to graduate school are strongly advised to take Philosophy 105A and 105B.

**Residence Requirement:** At least five upper-division courses required for the major must be completed successfully at UCI.

### Departmental Requirements for the Minor

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: History of Philosophy (Philosophy 110–117); Metaphysics and Epistemology (Philosophy 120–124); Value Theory (Philosophy 113B, 130–135); Logic and Methodology (Philosophy 105–108, 115, 140–148). 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. degree. 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 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., so that work can be tailored to the individual student's needs and interests. However, as a prerequisite for the Ph.D. degree, every student is required to have some experience in teaching.

The Ph.D. program is designed to take five years for the normally qualified student. In exceptional cases it may be possible to obtain the degree within four years. A Master's degree is not a prerequisite for the Ph.D. The following items are requirements for the Ph.D. degree.

**Distribution Requirements.** Students are required to take a range of courses designed to expose them to the various historical periods and fields of philosophy. No particular courses are required; when course offerings are announced, students are notified about which courses can be used to satisfy which requirements. In some cases, the requirement satisfied will ultimately depend on the content of the student's term paper(s).

The Distribution Requirements are:

1. History. To satisfy this requirement, students must receive a grade of B or better in at least four courses covering at least three of the following five historical periods: Ancient, Medieval, Modern, Kant and Nineteenth Century, and Twentieth Century.
2. Field. To satisfy this requirement, students must receive a grade of B or better in two courses in value theory and one course each in metaphysics and epistemology.

These requirements must be completed by the end of the seventh quarter in residence.

**Logic Requirement.** Students entering the program are expected to be familiar with elementary propositional and quantificational logic, including natural deduction techniques for both. A student with a weak background may wish to audit the lower-division courses Philosophy 30A and 30B or review the material in an independent study course (299) under the supervision of individual faculty members.

Given that background, to satisfy the Logic Requirement, students must receive a grade of B or better in Philosophy 205A and 205B. The first of these covers the language and techniques of elementary set theory: basic operations with sets, relations and functions, natural numbers and mathematical induction, and cardinal numbers. The second covers basic proof theory and model theory of first-order logic, including the deduction theorem, soundness and completeness theorems, compactness, and Löwenheim-Skolem theorems. These courses are devised to provide students with (a) the tools to assess logic-based arguments in the contemporary literature, and (b) a firm foundation on the basis of which students can explore further logical topics as their area of concentration requires.

This requirement must be completed by the end of the seventh quarter in residence.

**Tools of Research.** This requirement allows students to pursue the tool which they and their advisors deem most useful for their area of concentration, either a foreign language or some course of study outside philosophy. To satisfy this requirement, a student must pass an examination in a single appropriate foreign language or receive a grade of B or better in each of three appropriate graduate-level courses in a discipline other than philosophy.

The two-hour foreign language examination (administered by the Philosophy Department) requires students to translate, with the aid of a dictionary, passages from one or two philosophical authors. For the second option, courses of study outside philosophy will be

approved (by the Director of Graduate Studies) when they bear on a student's area of philosophical concentration. Though the courses must be in a discipline other than philosophy, they may in fact be taught in the Philosophy Department (e.g., a course in mathematical logic taught by a Philosophy faculty member).

This requirement must be completed by the end of the ninth quarter in residence.

**The Portfolio.** A portfolio is an extended writing sample designed to demonstrate a student's ability (a) to understand, analyze, and evaluate positions and arguments in classical and contemporary philosophical literature, and (b) to formulate and defend an original philosophical thesis. These virtues must be displayed at a level of sophistication that indicates the student's ability to write a Ph.D. dissertation.

The portfolio must be submitted to the Graduate Coordinator at the end of the fourth week of the student's seventh quarter in residence.

**Candidacy Examination.** In preparation for the Candidacy Examination, students consult with their thesis advisor and other appropriate faculty to prepare a reading list on their area of concentration and a brief dissertation proposal. Students apply for candidacy by filing appropriate forms, including a list (devised in consultation with their advisor) of appropriate members for their Candidacy Committee; one of these, the External Examiner, must come from outside the School of Humanities. The Committee is then appointed by the Department, on behalf of the Dean of Graduate Studies and the Graduate Council, to administer the oral Candidacy Examination on the reading list and proposal to determine whether or not the student is prepared to begin work on the dissertation.

This requirement must be completed by the end of the ninth quarter in residence. The Department Chair, on behalf of the Dean of Graduate Studies and the Graduate Council, then appoints a Doctoral Committee (typically taken from the Candidacy Committee and naturally including the dissertation advisor) to supervise the writing of the dissertation.

**Dissertation Defense.** Students must defend their dissertation during an oral examination administered by their Doctoral Committee.

## THE SALZBURG EXCHANGE PROGRAM

Both faculty and graduate students participate in this exchange of scholars between the University of Salzburg and the UCI Philosophy Department. To be eligible, students must have advanced to candidacy. Students who are selected spend one semester in Salzburg and teach one course in the general area of their dissertation topic. An upper-division course may be taught in English, but lower-division courses must be taught in German. (Some previous visitors have learned serviceable German by attending a Goethe institute during the preceding summer.) Typically, a Salzburg visitor receives a Salzburg Fellowship intended to cover travel expenses, and a stipend; those who teach while in Salzburg also receive a salary intended to cover living expenses (including health and dental insurance).

## EMPHASIS IN CRITICAL THEORY

The School of Humanities offers an Emphasis in Critical Theory. Students may petition the Critical Theory Committee for admission to the emphasis, normally by the middle of the second year of graduate study, after completing the Critical Theory Workshop, and with the recommendation of a workshop instructor or a faculty representative from Philosophy. In addition to the requirements for the Ph.D. in Philosophy, students must satisfy the following requirements:

- 1) The Workshop. Students must successfully complete the three-quarter Critical Theory Workshop. This sequence is conceived as a reading group, normally conducted by a team of instructors, and developed with the input of all participants. Significant texts

are discussed and analyzed in class; no term papers are required. (Students receive 0 units and In-progress grades for the fall and winter quarters; passing students receive 4 units and a Satisfactory grade for the spring quarter.

- 2) Advanced Critical Theory. Students must receive a grade of B or better in three Humanities 270 courses offered under the supervision of the Critical Theory Committee. At least three such courses will be offered each year. With the approval of the Department, these courses can be used to satisfy the Tools of Research requirement.
- 3) Students must participate in two committee-sponsored mini-seminars (six–eight hours each) offered by visiting scholars on their ongoing research.
- 4) Students must complete a research paper under the guidance of a three-member committee, selected in consultation with the Director of the Emphasis; at least one member must be from outside of the Philosophy Department. This paper may (but need not) be part of the portfolio or dissertation.

Upon completion of the Emphasis requirements, a letter certifying that fact, signed by the Dean of Humanities and the Director of the Emphasis, will be added to the student's dossier.

## EMPHASIS IN HISTORY AND PHILOSOPHY OF SCIENCE

An interdisciplinary group of faculty in the humanities and various sciences offers an emphasis in History and Philosophy of Science. In addition to the requirements for the Ph.D. in Philosophy, students must satisfy the following requirements:

- 1) History of Science. Students receive a grade of B or better in History 275 and two sections of independent readings in the history of science, which are often offered in conjunction with an upper-division undergraduate section of History 135A-F. With the approval of the Department, this sequence can be used to satisfy the Tools of Research Requirement.
- 2) Philosophy of Science. Students must receive a grade of B or better in three courses from the following list: Philosophy 205C, 206, 240, 245, 247. (These may be repeated as topics vary, except Philosophy 205C.)
- 3) The portfolio must contain at least one paper in the philosophy of science.
- 4) The dissertation must contain a significant philosophy of science component. With the recommendation of a Department of Philosophy faculty member of the History and Philosophy of Science Committee, the dissertation proposal may be submitted to the Committee for approval.

## EMPHASIS IN LOGIC AND METHODOLOGY

An interdisciplinary group of faculty in the humanities and various sciences offers an emphasis in Logic and Methodology. This Emphasis is offered for students who wish to study topics related to logic, the philosophy of mathematics or logic, or the philosophy of science. In addition to the requirements for the Ph.D. in Philosophy, students must satisfy the following requirements:

- 1) Mathematics or Science. Students must receive a grade of B or better in three graduate-level courses in mathematics or in the same science which have methodological content. With the approval of the Department, these courses can be used to satisfy the Tools of Research Requirement. Students may elect to satisfy a more stringent requirement (the math track) by taking a series of at least six mathematics courses either at UCI or at UCLA through the Intercampus Exchange Program. The courses are selected in consultation with the student's UCI Philosophy advisor. Regular mathematics department qualifying examinations may be substituted for some of the course work.

- 2) Philosophy of Science. Students must receive a grade of B or better in three courses from the following list: Philosophy 205C, 206, 240, 245, 247. (These may be repeated as topics vary, except Philosophy 205C.) Courses used to satisfy this requirement cannot also be used to satisfy requirement 1.
- 3) The portfolio must contain at least one paper in logic, the philosophy of mathematics or logic, or the philosophy of science.
- 4) The dissertation must contain a significant logic, philosophy of mathematics or logic, or philosophy of science component.

## Courses in Philosophy

### LOWER-DIVISION

**1 Introduction to Philosophy (4).** A selection of philosophical problems, concepts, and methods, e.g., free will and cause and substance, personal identity, the nature of philosophy itself. (IV)

**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, e.g., the nature of the good life and the moral justification of conduct. (IV)

**5 Contemporary Moral Problems (4).** Selected moral issues of current interest, e.g., abortion, sexual morality, euthanasia, capital punishment, reverse discrimination, civil disobedience, or violence. (IV)

**6 Philosophy and Psychoanalysis (4).** An analysis of Freudian psychoanalytic theory and therapy, and its significance for such 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 Existentialism (4).** An analysis of themes in phenomenology and existentialism and their philosophical origins, e.g., consciousness, self and other, freedom and individuality. (IV)

**9 Feminist Moral and Political Philosophy (4).** Selected topics in moral and political philosophy analyzed from feminist perspectives, e.g., gender-based differences in moral attitudes and virtues, hidden in traditional accounts of political obligation, and feminism and sexual orientation. Prerequisite: Philosophy 4 recommended. (IV)

**10 History of Ancient Philosophy (4).** Examination of the central philosophical themes developed by the pre-Socratics, Socrates, Plato, Aristotle, the Stoics, the Epicureans, and the Skeptics. (IV)

**11 History of Medieval Philosophy (4).** A study of some of the major theological and philosophical texts from the Medieval period. Philosophy 10 recommended as background. (IV)

**12 History of Modern Philosophy (4).** A study of major developments in western philosophy from Descartes to Kant with readings from Descartes, Leibniz, Locke, Berkeley, Hume, and Kant. Philosophy 10 or 11 recommended as background. (IV)

**13 History of Contemporary Philosophy (4).** A study of recent philosophical developments in Anglo-American and Continental philosophy with readings from such figures as Russell, Moore, Wittgenstein, Quine, Heidegger, and Sartre. Philosophy 12 recommended as background. (IV)

**29 Critical Reasoning (4).** Introduction to analysis and reasoning. The concepts of argument, premise, and conclusion, validity and invalidity, consistency and inconsistency. Identifying and assessing premises and inferences. Deductive versus inductive reasoning, and introduction to the probability calculus. Evaluating definitions. Informal fallacies. (V)

### 30 Introduction to Logic

**30A Introduction to Symbolic Logic I (4).** An introduction to the symbolism and methods of the logic of statements, including evaluation of arguments by truth tables, the techniques of natural deduction, and semantic tableaux. (V)

**30B Introduction to Symbolic Logic II (4).** Continuation of Philosophy 30A. An introduction to the symbolism and methods of first-order predicate logic with identity, including evaluation of arguments by the techniques of natural deduction and semantic tableaux. Prerequisite: Philosophy 30A. (V)

**31 Introduction to Inductive Logic (4).** Philosophical questions concerning the foundations of scientific inference, e.g., the traditional problem of induction, the Goodman paradox, the concept of cause, Mill's method of inductive reasoning, probability calculus, different interpretations of probability, and their interaction in inductive reasoning. Prerequisite: Philosophy 30A. (V)

**40 Introduction to the Philosophy of Science (4).** An introduction to philosophical theories of scientific method. Examples drawn from actual scientific theories and experiments. Formerly Philosophy 60. (IV)

### UPPER-DIVISION

**NOTE:** These courses are grouped in four main subfields: History of Philosophy (110–117); Metaphysics and Epistemology (120–124); Value Theory (113B, 130–135); and Logic and Methodology (105–108, 115, 140–148).

**100 Writing Philosophy (4).** Discussion of those aspects of writing of special importance in philosophy, e.g., philosophical terminology, techniques for evaluating arguments, philosophical definitions and theories. At least 4,000 words of assigned composition based on philosophical readings. Prerequisites: satisfaction of lower-division writing requirement; junior standing or consent of instructor. Philosophy majors given admission priority. Formerly Philosophy 139.

**101 Introduction to Metaphysics (4).** A study of one or more of the problems of "first philosophy," e.g., substance, free will, causation, abstract entities, identity. Formerly Philosophy 140A.

**102 Introduction to the Theory of Knowledge (4).** A study of one or more of the basic issues in epistemology, e.g., the role of perception in the acquisition of knowledge, the nature of evidence, the distinction between belief and knowledge, and the nature of truth and certainty. Formerly Philosophy 145A.

**103 Introduction to Moral Philosophy (4).** A study of one or more of the problems of contemporary moral philosophy, e.g., the nature of justice, liberalism versus conservatism, happiness and its relation to virtue and right conduct, the objectivity of moral standards. Formerly Philosophy 170A.

**105A Elementary Set Theory (4).** An introduction to the basic working vocabulary of mathematical reasoning. Topics include: sets, Boolean operations, ordered n-tuples, relations, functions, ordinal and cardinal numbers. Prerequisite: Philosophy 30B or an upper-division course in mathematics or consent of instructor. Philosophy 105A and Mathematics 151 cannot both be taken for credit. Formerly Philosophy 130A.

**105B Metalogic (4).** Introduction to formal syntax (proof theory) and semantics (model theory) for first-order logic, including the deduction, completeness, compactness, and Löwenheim-Skolem theorems. Prerequisites: Philosophy 30B and 105A, or consent of instructor. Philosophy 105B and Mathematics 150 cannot both be taken for credit. Formerly Philosophy 130B.

**105C Effective Processes (4).** Introduction to the formal theory of effective processes, including recursive functions, Turing machines, Church's thesis, and proofs of Gödel's incompleteness theorem for arithmetic, and Church's undecidability theorem for first-order logic. Prerequisite: Philosophy 105B or consent of instructor. Philosophy 105C and Mathematics 152 cannot both be taken for credit. Formerly Philosophy 130C.

**106 Topics in Mathematical Logic (4).** Selected topics in mathematical logic, e.g., set theory, modal theory, recursion theory, proof theory. Prerequisite: Philosophy 105A-B or consent of instructor. Formerly Philosophy 132. May be repeated for credit as topics vary.

**107 Topics in Philosophical Logic (4).** Selected topics in philosophical logic, e.g., relevance logic, free logic, modal and tense logic, deontic logic, theory of definite descriptions, calculus of individuals. Prerequisite: Philosophy 105A-B or consent of instructor. Formerly Philosophy 133. May be repeated for credit as topics vary.

**108 Topics in Inductive Logic (4).** Selected topics in inductive logic, e.g., Bayes-LaPlace-Carnap systems of inductive logic, confirmation of generalizations, exchangeability and partial exchangeability, analogy and periodicity in inductive logic, variety of evidence. Prerequisite: Philosophy 31 or an appropriate course in probability. May be repeated for credit as topics vary.

**110 Ancient Philosophy.** Selected topics from the writings of Plato and Aristotle, e.g., Aristotle's criticisms of Plato's metaphysics, ethics, or politics.

**110A Ancient Philosophy (4).** Formerly Philosophy 100.

**110B Plato (4).** Formerly Philosophy 102.

**110C Aristotle (4).** Formerly Philosophy 101.

**111 Medieval Philosophy.** 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.

**111A Medieval Philosophy (4).** Formerly Philosophy 105.

**111B Augustine (4)**

**111C Anselm (4)**

**111D Aquinas (4)**

**112 Renaissance Philosophy (4).** A study of such authors as Bruno and Montaigne.

**113 Modern Philosophy.** A study of how one or two central topics are treated by various figures of the modern period.

**113A Modern Philosophy (4).** Formerly Philosophy 108.

**113B Descartes (4).** Formerly Philosophy 109.

**113C Hobbes (4).** Formerly Philosophy 111.

**113D Leibniz (4).** Formerly Philosophy 110.

**113E Locke (4).** Formerly Philosophy 115.

**113F Hume (4).** Formerly Philosophy 115.

**113G Kant (4).** Formerly Philosophy 117.

**114 Nineteenth-Century Philosophy.** A study of some of the major figures after Kant, especially in German idealism and social thought. Formerly Philosophy 120.

**114A Nineteenth-Century Philosophy (4)**

**114B Hegel (4)**

**114C Nietzsche (4)**

**114D Marx (4)**

**115 Analytic Philosophy.** Selected topics in analytic philosophy, e.g., conceptual analysis, the nature of truth and meaning, the analytic/synthetic distinction.

**115A Analytic Philosophy (4).** Formerly Philosophy 125.

**115B Frege (4).** Formerly Philosophy 122.

**115C Russell (4)**

**115D Wittgenstein (4)**

**115E Quine (4)**

**116 Continental Philosophy.** A study of some of the major figures and texts in early twentieth-century continental European thought.

**116A Continental Philosophy (4)**

**116B Husserl (4)**

**116C Heidegger (4)**

**116D Freud (4)**

**117A Topics in Asian Philosophy (4).** Selected topics in the philosophies of Asia, e.g., Yoga, Buddhism, Vedanta, Confucianism, Taoism, and Shinto. Same as East Asian Languages and Literatures 117. Formerly Philosophy 14. May be repeated for credit as topics vary. (VII-B)

**117B Topics in Jewish Philosophy (4).** Selected topics in the study of major Jewish thinkers. May be repeated for credit as topics vary.

**120 Topics in Metaphysics (4).** Selected topics in metaphysics. May be repeated for credit as topics vary.

**121 Topics in Epistemology (4).** Selected topics in the theory of knowledge. May be repeated for credit as topics vary.

**122 Topics in Philosophy of Mind (4).** Selected topics involving the concept of mind, e.g., the relation between mind and body, the self, personal identity, consciousness, the unconscious. Formerly Philosophy 155. May be repeated for credit as topics vary.

**123 Topics in Philosophy of Religion (4).** Critical examination of concepts involved in the theological literature, e.g., the nature and existence of God, miracles, the problem of evil, divine command theories in ethics. Formerly Philosophy 194. May be repeated for credit as topics vary.

**124 Topics in Theory of Rational Action (4).** Selected topics in the theory of rational choice and action, e.g., the relationship between beliefs, desires, and actions; utility maximization; self-interest and rationality; conflicts between present and future aims; Newcomb's problem and causal decision theory; prisoner's dilemma. Prerequisite: one college-level course in logic or mathematics. Formerly Philosophy 186. May be repeated for credit as topics vary.

**130 Topics in Moral Philosophy (4).** Selected topics in ethics. May be repeated for credit as topics vary.

**131 Applied Ethics.** Application of moral theories and arguments to important problems facing contemporary society.

**131A Applied Ethics (4).** Topics may include capital punishment, world hunger, obligations to future generations, environmental ethics, animal rights, economic justice, sexual morality, affirmative action, racism and sexism, or legalization of drugs.

**131B 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. Formerly Philosophy 183.

**131C Medical Ethics (4).** Analysis of moral issues concerning health care. Topics may include: just allocation of scarce medical resources, the doctor/patient relationship, genetic engineering, surrogate motherhood, abortion, euthanasia, or social policy concerning AIDS. Formerly Philosophy 171.

**131D Ethical Issues in Engineering (4).** Application of ethical theory to moral problems confronted by engineers, scientists, managers, e.g., conscience and free expression within corporations; professional obligations to the public; the role of values in safety decisions; ethics codes; whistleblowing. Examination of case studies. Prerequisite: satisfactory completion of the lower-division writing requirement. Prerequisite: completion of the lower-division writing requirement. Same as Engineering 192.

**131E Race and Gender (4).** Investigation of philosophical issues concerning race and gender, e.g., the grounding of these concepts (is it scientific or social?); race, gender, and individual self-conception; race and ethnicity; "color-blind" society; group solidarity versus racism; affirmative action; multiculturalism. Same as Women's Studies 173B. (VII-A)

**132 Topics in Political and Social Philosophy (4).** Selected topics in social and political philosophy, e.g., the functions of government, the justification of political authority, the nature of democracy, the varieties of liberty, and social justice. Readings from classical and contemporary sources. Formerly Philosophy 180. May be repeated for credit as topics vary.

**133 Topics in Philosophy of Law (4).** Selected topics concerning legal systems and the concept of law, e.g., the nature and purpose of law, the nature of authority, the relationship between law and morality, law and political-economic systems. Formerly Philosophy 184. May be repeated for credit as topics vary.

**134 Philosophy of Beauty (4).** An introduction to the field of aesthetics via its principle historical manifestation, the philosophy of beauty. Intensive readings of selected classical philosophers of beauty such as Plato, Plotinus, Hume, Kant, Schopenhauer, and Santayana. Formerly Philosophy 190.

**135 Topics in Theory of Art (4).** Review and critique of one or more theories of art. Formerly Philosophy 191. May be repeated for credit as topics vary.

**140 Topics in Philosophy of Science (4).** Selected topics in contemporary philosophy of science, e.g., the status of theoretical entities, the confirmation of theories, the nature of theoretical entities, the confirmation of theories, the nature of scientific explanation. Philosophy 40 recommended as background. Formerly Philosophy 160. May be repeated for credit as topics vary. (IV)

**141 Topics in Philosophy of Physics (4).** Selected topics in the philosophy of physics, e.g., the interpretation of quantum mechanics, the nature of space-time, the problem of quantum field theories. Philosophy 40 recommended as background. Formerly Philosophy 163. May be repeated for credit as topics vary.

**142 Topics in Philosophy of Biology (4).** Selected topics in the philosophy of biology, e.g., scientific method in biology, the structure of evolutionary theory, teleology, ethics, and evolution. Philosophy 40 recommended as background. Same as Biological Sciences 142. Formerly Philosophy 163. May be repeated for credit as topics vary.

**143 Topics in Philosophy of Psychology (4).** Selected topics in the philosophy of psychology, e.g., the nature of psychological explanation, reductionism, issues in cognitive, behavioral, and neuroscience. Formerly Philosophy 156. May be repeated for credit as topics vary.

**144 Topics in Philosophy of Social Science (4).** Selected topics in the philosophy of the social sciences, e.g., is their goal to understand behavior or to predict and control it?; are they normative and the natural sciences not?; do they incorporate philosophical doctrines about language and mind? Formerly Philosophy 182. May be repeated for credit as topics vary.

**145 Topics in Philosophy of Language (4).** Selected topics in the philosophy of language, e.g., the nature of meaning, mechanisms of reference, speech acts. Same as Linguistics 141. Formerly Philosophy 150. May be repeated for credit as topics vary.

**146 Topics in Philosophy of Logic (4).** Selected topics in the philosophy of logic, e.g., the nature of our knowledge of logical truths, the status of propositions, definite descriptions, and existential presuppositions. May be repeated for credit as topics vary.

**147 Topics in Philosophy of Mathematics (4).** Selected topics in the philosophy of mathematics, e.g., the status of mathematical entities, the nature of our knowledge of mathematical truths, the relationship of mathematics to logic. Formerly Philosophy 165. May be repeated for credit as topics vary.

**148 Philosophical Foundations of Probability (4).** A study of probability as limiting relative frequency, rational degree of belief, or propensity. Bayesian inference. DeFinetti's theorem. Prerequisite: Philosophy 31 or consent of instructor. Formerly Philosophy 162.

**149 Senior Seminar in History and Philosophy of Science (4).** Topics in the history and philosophy of science. Required of and limited to History and Philosophy of Science minors. May be repeated for credit as topics vary.

**150 Phenomenology (4).** A study of the foundations of phenomenology in Husserl and its background in Bolzano, Frege, Brentano, Meinong, Kant, and Descartes. Topics include phenomenological method, theory of intentionality, meaning, perception, evidence, ego, other minds, intersubjectivity, and life-world. Formerly Philosophy 127. May be repeated for credit as topics vary.

**151 Existentialism (4).** A study of such central existentialist thinkers as Heidegger and Sartre. Philosophy 7 or 150 recommended as background. Formerly Philosophy 128.

**152 Topics in Feminism (4).** A study of selected topics in feminist theory and/or gender studies. Same as Women's Studies 173A. Formerly Philosophy 185. May be repeated for credit as topics vary.

**153 Pragmatism (4).** A study of such central pragmatist thinkers as Peirce, James, Dewey, Quine, Rorty.

**190 Special Topics in Philosophy (4).** Lectures on selected topics to be given by regular faculty and visiting faculty. May be repeated for credit as topics vary.

**199 Directed Special Studies (2 to 4).** Independent study on a research topic supervised by a faculty member. May be repeated for credit as topics vary.

## GRADUATE COURSES

**200 Special Topics in Philosophy (4).** Seminars on selected topics to be given by regular faculty and visiting faculty. May be repeated for credit as topics vary. Formerly Philosophy 300.

**201 First-Year Seminar (4).** Examination of some standard works in history of philosophy, value theory, metaphysics, or epistemology. Open to and strongly recommended for all first-year Philosophy graduate students.

**205A Set Theory (4).** Formerly Philosophy 230A.

**205B Metalogic (4).** Formerly Philosophy 230B.

**205C Effective Processes (4).** Formerly Philosophy 230C.

**206 Topics in Logic (4).** May be repeated for credit as topics vary. Formerly Philosophy 235.

**210 Topics in Ancient Philosophy (4).** May be repeated for credit as topics vary.

**211 Topics in Medieval Philosophy (4).** May be repeated for credit as topics vary.

**212 Topics in Renaissance Philosophy (4).** May be repeated for credit as topics vary.

**213 Topics in Modern Philosophy (4).** May be repeated for credit as topics vary.

**214 Topics in Nineteenth-Century Philosophy (4).** May be repeated for credit as topics vary.

**215 Topics in Analytic Philosophy (4).** May be repeated for credit as topics vary.

**216 Topics in Continental Philosophy (4).** May be repeated for credit as topics vary. Formerly Philosophy 227.

**218 Topics in Contemporary Philosophy (4).** May be repeated for credit as topics vary. Formerly Philosophy 226.

**220 Topics in Metaphysics (4).** May be repeated for credit as topics vary. Formerly Philosophy 241.

**221 Topics in Epistemology (4).** May be repeated for credit as topics vary. Formerly Philosophy 246.

**222 Topics in Mind and Action (4).** May be repeated for credit as topics vary. Formerly Philosophy 257.

**230 Topics in Ethics (4).** May be repeated for credit as topics vary. Formerly Philosophy 272.

**232 Topics in Political and Social Philosophy (4).** May be repeated for credit as topics vary. Formerly Philosophy 283.

**234 Topics in Aesthetics (4).** May be repeated for credit as topics vary. Formerly Philosophy 293.

**240 Topics in Philosophy of Science (4).** May be repeated for credit as topics vary. Formerly Philosophy 261.

**241 Topics in Philosophy of Physics (4).** May be repeated for credit as topics vary.

**242 Topics in Philosophy of Biology (4).** May be repeated for credit as topics vary.

**245 Topics in Philosophy of Language (4).** Same as Linguistics 241. May be repeated for credit as topics vary. Formerly Philosophy 252.

**246 Topics in Philosophy of Logic (4).** May be repeated for credit as topics vary.

**247 Topics in Philosophy of Mathematics (4).** May be repeated for credit as topics vary. Formerly Philosophy 265.

**250 Topics in Existentialism and Phenomenology (4).** May be repeated for credit as topics vary. Formerly Philosophy 229.

**298 Independent Study (4 to 12).** May be repeated for credit.

**299 Directed Research (4 to 12).** May be repeated for credit.

**398 Teaching Assistant Training Program (4).** An introduction to theories, methods, and resources that are useful in teaching at the university level, designed specifically for teaching assistants. Short reading assignments, video-tape screenings, guest speakers. Credits received for this course do not count toward the residency requirement for the Ph.D. Satisfactory/Unsatisfactory grading only.

**399 University Teaching (4-4-4).** Required of and limited to Teaching Assistants.

## PROGRAM IN RUSSIAN

156 Humanities Hall; (714) 824-5433

Michael A. Green, *Director*

### Faculty

Harold Baker, Ph.D. Brown University, *Assistant Professor of Russian* (comparative literature, critical theory, literature and visual culture, Tolstoy, Mandelstam)

Guy de Mallac, Ph.D. Cornell University, *Professor Emeritus 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)

Victorina Lefebvre, Ph.D. Lomonosov Moscow State University, *Lecturer* (methods of teaching, comparative study of Western and Soviet culture, Russian language and literature)

The Program in Russian provides a coherent course of undergraduate studies in Russian language, culture, and society, yet is flexible and dynamic enough to respond to students' individual needs and interests, as well as to changes in Russia itself. The Program emphasizes undergraduate research, which is required of all Russian majors.

Russian majors and students from outside the Program are exposed to the elements of Russian literature, culture, and area studies through a range of courses taught in English and, as a rule, without prerequisites. The Russian Culture course (Russian 50) focuses on



particular issues of Russian culture and society. Student input is actively solicited in the development of new topics for this course.

The final year of study for Russian majors includes, along with continuing language study, a sequence of experiences culminating in an independent undergraduate research project overseen by one or more faculty members. This advanced stage of the curriculum involves intensive training in reading original Russian sources and a guided group reading course in which the participants explore potential research topics. In appropriate cases, the Program will seek to place fourth-year students as interns in faculty-generated research projects dealing with Russia.

It is also possible to complete a Russian minor by studying the Russian language through the third year and taking a selection of other Program courses.

All students in Russian language courses are encouraged to take part in the University's Education Abroad Program and spend a portion of their junior or senior year studying in Russia. Additional information is available in the Center for International Education section of this *Catalogue*.

## REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57–61.

**School Requirements:** See page 190.

### Program Requirements for the Russian Major

Russian 100A-B-C, 101A-B-C, 150, 151, 152; 50 must be taken three times, with three different topics; *either* 191, 192, and 193, *or* a year-long research commitment, inside or outside the Program, approved by the Program (Russian 195A-B-C).

**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 Russian Minor

Russian 100A-B-C; Russian 50 must be taken two times, with two different topics; two additional courses offered by the Program, one of which must be an upper-division course and one of which may be an additional Russian 50 with a different topic.

**Residence Requirement for the 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 should schedule a formal meeting with their advisor at least once per year, usually during Orientation Week before the beginning of classes in the fall, to review course choices and progress toward degree completion. More generally, the Program faculty can provide full information and consultation on graduate school, study and work opportunities abroad, and the full range of outside programs. In addition, a file of companies and organizations having contacts with Russia is maintained to assist students seeking internships or employment.

## CAREER OPPORTUNITIES

Russian is not a pre-professional program, but rather a humanistic discipline. Its goals, similar to those of other humanistic disciplines, are to increase knowledge of the world and human society, develop the intellectual skills of analysis and criticism, deepen communicative abilities and sensibilities, clarify values and conflicts of values, and, in general, problematize the human condition, render vivid and dramatic its peculiar responsibilities and creative potential. Russian is distinct from other humanistic disciplines in being centered on a particular object of knowledge—Russia, its

culture, history, and society—and a particular central skill—knowledge of the Russian language.

The faculty believe that a UCI graduate with a degree in Russian is a broadly educated, intellectually and culturally empowered individual who will be valuable in any undertaking or enterprise, by virtue of both a specific knowledge of Russia and Russian and a general capacity for independent, productive thought and activity. Graduates with an excellent academic record should be good candidates for postgraduate professional training of all kinds and especially for those with strong verbal and analytical requirements, such as law, business, and public administration.

During the twentieth century, Russia has become one of the world's dominant political, cultural, and economic entities. Due to the peculiar relationship of antagonism that has existed between Russia and the United States through most of this century, most career possibilities using Russian in this country have been in government, and specifically in the foreign policy, national security, intelligence, and defense establishments.

In recent years, the relationship of antagonism has ended, but Russia's importance in the world has not been essentially altered. While the demand for specialists in various sectors of government has eased, relationships between our countries at other levels of society are growing more active. Particular areas in which the need for Russian language and cultural competence are particularly evident right now include trade, environmental protection, social services, law, medicine, and technology. However, this picture may evolve in the years ahead, Russia's natural and human resources and its geopolitical centrality guarantee it a continuing dominant importance in all of the United States' international relationships, particularly its economic ones.

Russian is, of course, also a properly academic specialty, and the need for teachers and researchers in Russian at all levels continues to be strong. In recent years, Russian has been the second fastest-growing language in American colleges and universities. It also continues to be taught at a significant number of secondary schools. Students with very strong achievement in Russian language competence, as well as broad humanistic interests in cultural and literary or linguistic studies, should consult with the Program faculty on the possibility of applying to graduate school. A variety of higher academic disciplines involve the knowledge of Russian, including Slavic Languages and Literatures, Russian and East European Area Studies, and others.

In addition to the counseling resources provided by the Program in Russian, the Career and Life Planning 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.

## 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.

**2A-B-C Second-Year Language Study (5-5-5) F, W, S.** Students read simple passages from contemporary Russian literary texts and newspapers. Development of oral skills and exposure to Russian culture continue. Prerequisites: Russian 1A-B-C. (2A: VI)

**3 Russian Conversation (2) F, W, S.** 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 Russian radio and television broadcasts. Eligible students at all levels encouraged to enroll. Prerequisite: Russian 1C or consent of instructor. May be taken for credit six times. Formerly Russian 103.

**50 Russian Culture (4) F, W, S.** Study of varied topics in Russian culture, area studies, and society, both in the present and in historical perspective.

Topics are not normally repeated for a two-year period. May be taken four times for credit as topics vary. (IV, VII-B)

**99 Special Studies Russian (1 to 5).** Prerequisite: consultation with instructor necessary prior to enrollment.

## UPPER-DIVISION

**100A-B-C Third-Year Language Study (4-4-4) F, W, S.** Continuation of second-year program, with emphasis on grammar review, development of oral and written composition skills, and reading comprehension. Prerequisite: Russian 2C or consent of instructor. (VII-B)

**101A-B-C Fourth-Year Language Study (4-4-4) F, W, S.** Advanced study of Russian. 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. Prerequisite: Russian 100C. Open to qualified nonmajors by consent of instructor. (VII-B)

**150 Russian Realist Novel: Dostoevsky and Tolstoy (4) F, W, S.** Introduces students to selected masterworks by Russia's most widely famous authors. The texts are studied in their historical, formal, and philosophical dimensions; instruction is by lecture and discussion. Requirements include short papers and a final examination. Taught in English. Prerequisite: satisfactory completion of the lower-division writing requirement. (VII-B)

**151 Classics of Russian Literature (4) F, W, S.** Employs a variety of approaches—historical, sociological, formalist, comparativist—to illuminate one of the world's great bodies of writing. Among writers whose work and thought examined are Pushkin, Lermontov, Gogol, Belyi, Bulgakov, Turgenyev, Grekova. Taught in English. Prerequisite: satisfactory completion of the lower-division writing requirement. May be taken two times for credit as topics vary. (VII-B)

**152 Russian Stage and Film Drama (4) F, W, S.** Investigates the development of Russian theatre from its church origins through the Bolshevik Revolution and beyond. Special attention to Griboyedov's *Woe From Wit*, Nikolai Gogol's *Order of St. Vladimir Third Class* and *Inspector General*, and others. Anton Chekhov's works provide the course's core. Taught in English. Prerequisite: satisfactory completion of the lower-division writing requirement. (VII-B)

**191 Proseminar in Reading Russian Sources (4) F.** Intensive training in reading original scholarly texts in Russian. Emphasis on developing reading speed and efficiency. Required for Russian majors in preparation for Russian 192 and 193. Prerequisite: Russian 100C or consent of instructor. May be taken for credit two times as topics vary. Formerly Russian 197.

**192 Seminar in Advanced Russian Studies (4) W.** Students explore range of topics in Russian culture and area studies through independent reading, oral presentations, and discussion. Instructor provides basic bibliography. Conducted in Russian. Prerequisite: Russian 101A and 191 or consent of instructor. May be taken for credit two times as topics vary. Formerly Russian 198.

**193 Undergraduate Research in Russian Studies (4) S.** Independent research in a carefully defined topic of Russian culture or area studies under individual direction of faculty member or members. Normally involves substantive work with Russian language sources or field work in Russian and results in extensive written report summarizing research and results. Prerequisites: Russian 101B, 191, and 192. Formerly Russian 199.

**195A-B-C Research Internship (4-4-4) F, W, S.** Year-long commitment to assist in a faculty-originated research project, either in the Program in Russian or outside of it, in research directly concerned with Russia or Russian culture or society and utilizing the Russian language. Prerequisite: Russian 100C or consent of instructor.

**198 Directed Group Study (4) F, W, S.** Group independent study under direct faculty supervision. Prerequisite: consent of instructor. May be taken two times for credit. Formerly Russian 190.

**199 Independent Study (1 to 4) F, W, S.** Independent study under direct faculty supervision. Prerequisite: consent of instructor. May be taken two times for credit. Formerly Russian 190.

## DEPARTMENT OF SPANISH AND PORTUGUESE

322 Humanities Hall; (714) 824-6901

Juan Bruce-Novoa, *Department Chair*

### Faculty

- Richard Barrutia, Ph.D. University of Texas, *Professor Emeritus of Spanish* (applied linguistics, bilingualism and English as a second language)  
 Juan Bruce-Novoa, Ph.D. University of Colorado, *Chair of the Department and 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, *Associate 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)  
 Juergen Kempff, Ph.D. University of California, Santa Barbara, *Lecturer and Language Curriculum Director* (second language acquisition, applied linguistics, Spanish as a foreign language)  
 Seymour Menton, Ph.D. New York University, *Research 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 Emeritus of Spanish* (Latin American literature, poetry and essay)  
 Julian Palley, Ph.D. University of New Mexico, *Professor Emeritus of Spanish* (modern Spanish literature)  
 Armin Schwegler, Ph.D. University of California, Berkeley, *Professor of Spanish* (history of Spanish, dialectology, historical linguistics, typology, Creoles)  
 Jacobo Sefamí, Ph.D. University of Texas at Austin, *Director of Latin American Studies and Assistant Professor of Spanish* (Latin American literature, contemporary poetry)  
 Dayle Seidenspinner-Núñez, Ph.D. Stanford University, *Professor of Spanish* (medieval Spanish and comparative literature)  
 Juan Villegas, Ph.D. Universidad de Chile, *Research Professor of Spanish* (literary theory, modern Spanish literature, Latin American theatre and poetry)  
 Zidia Webb, M.A. Michigan State University, *Lecturer Emerita in Spanish and Portuguese*

## 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 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 a major in Portuguese is not offered, advanced literature courses are available. In addition, an undergraduate minor is offered.

The faculty encourages Spanish majors or minors who are serious about improving their Spanish language ability in reading, writing, and speaking to take advantage of opportunities to immerse themselves in the Spanish language by studying in Chile, Costa Rica, Mexico, Spain, or other Spanish-speaking countries through the Education Abroad Program (EAP) or through the International Opportunities Program (IOP). Programs are available for the summer, one quarter, one semester, or one year. While studying abroad through EAP, students can continue to make progress toward their UCI degree. See the Center for International Education section of the *Catalogue* or an academic counselor for additional information.

## REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57–61.

**School Requirements:** See page 190.

### Departmental Requirements for the Major

Spanish 2C or Spanish 5 is a prerequisite to major requirements. Spanish 10A is a prerequisite to Spanish 10B. Spanish 10B is either a prerequisite or a corequisite for the Spanish 100A–E series.

**Core:** Spanish 10A-B; Spanish 100A or 100B; Spanish 100C or 100D; Spanish 100E; Spanish 110A, 110B, or 110C (students in the bilingualism track must take 110C); Spanish 113A. In addition, the student must choose one or more of the following emphases:

**Literature and Culture:** Six upper-division courses in literature, two of which may be in culture, film, and/or creative writing, plus two additional courses in the Spanish 100A–E series (therefore, the entire 100A–E series must be completed). NOTE: two courses in the Spanish 100A–E series must be completed before enrolling in upper-division literature courses numbered above 100. Students may not enroll in more than two of the 100 series courses per quarter.

**Linguistics:** Linguistics 3, Spanish 113B, plus any three courses selected from: Linguistics 154, 169, 170 and Spanish 187, 201, 202, 205 (students are encouraged to take no more than one of the Spanish 200 series courses; if at all possible, this course should be taken in their senior year). In addition, students must take two additional upper-division Spanish linguistics or general linguistics courses (general linguistics courses are offered by the Department of Linguistics). Students may double major in Spanish and Linguistics but may not count the same course for both majors.

**Bilingualism:** Spanish 15, 107, 113B, 142 (previously Spanish 134), 105 (previously 100A), 106A or 106B (previously Spanish 100B and 115, respectively), 114, and one additional upper-division Spanish literature course.

**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

Spanish 2C or 5 (or equivalent) is a prerequisite to minor requirements.

Seven courses in Spanish, including Spanish 10A and 10B and at least four upper-division courses.

**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.

The emphasis in bilingualism is very useful for many of the fields described above.

The Career and Life Planning 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 and Life Planning Center section for additional information.

## Distinguished Visiting Professors

The Department's Distinguished Visiting Professors program brings students in direct contact with some of the outstanding intellectuals in the field of Spanish, Latin American, and Chicano/United States Latino literatures and cultures. Distinguished visiting professors teach both graduate and undergraduate courses during winter and spring quarters and produce a publication for the *Hispanic Studies Series* published by Juan De La Cuesta. Program participants have included Professor Elias L. Rivers (1991) from the State University of New York at Stonybrook, one of the most important American scholars in Spanish Golden Age literature; Alfonso Sastre (1992), the most prestigious Spanish playwright and intellectual; Professor Hernan Vidal (1993) from the University of Minnesota, a well-known theorist and scholar in Latin American literature and culture; Professor John Kronik (1994) from Cornell University, a renowned scholar of modern Spanish literature; and Professor José Agustín (1995), a leading Mexican novelist and cultural critic.

## Graduate Program

All graduate courses in the Department of Spanish and Portuguese are taught in Spanish, unless otherwise indicated in the course description.

## 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.

### DOCTOR OF PHILOSOPHY 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.

A graduate emphasis in Feminist Studies also is available. Refer to the Women's Studies section of the *Catalogue* for information.

### 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 assist in teaching 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 Department, on behalf of the Dean of Graduate Studies and 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 Department Chair, on behalf of the Dean of Graduate Studies and 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.

### 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 1C or equivalent. Same as Women's Studies 170PA when topic is appropriate. May be repeated for credit as topics vary.

**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

**243 Seminar on Luso-Brazilian Literature (4) F.** Critical analysis of selected literary works from Portugal and/or Brazil. Contextualizes the works within their historical and literary specificity and discusses pertinent theoretical issues raised by them. Conducted in Portuguese. Prerequisite: reading knowledge of Portuguese. May be repeated for credit once provided course content varies.

**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).** Communicative approach with emphasis on conversational skills: the students and their environment, their experiences, and their opinions about issues. Reading and writing skills also introduced. Taught completely in Spanish. Spanish 1A-B-C and Spanish S1AB-BC may not both be taken for credit.

**S1AB-BC Fundamentals of Spanish (7.5-7.5) Summer.** First-year Spanish in an intensified form. Same as Spanish 1A-B-C during academic year. Prerequisite for S1AB: none; for S1BC: Spanish S1AB or 1B, or two years of high school Spanish. Spanish S1AB-BC and Spanish 1A-B-C may not both be taken for credit.

**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. Prerequisite: Spanish 1C or equivalent. Spanish 2A-B-C and Spanish S2AB-BC may not both be taken for credit. (2A: VI)

**S2AB-BC Intermediate Spanish (6-6) Summer.** Second-year Spanish in an intensified form. Same as Spanish 2A-B-C during academic year. Prerequisite: Spanish 1C or three years of high school Spanish. Spanish S2AB-BC and Spanish 2A-B-C may not both be taken for credit. (S2AB: VI)

**5 Spanish for Spanish Speakers (4) F, W, S.** 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. Equivalent to Spanish 2C. Prerequisite: advanced oral proficiency in Spanish. (VI)

**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. **10B:** Includes introduction to literary analysis. Prerequisite for 10A: completion of Spanish 2C or 5 or equivalent. Prerequisite for 10B: Spanish 10A. (VII-B)

**15 Advanced Spanish Conversation (4).** Primarily designed to improve the fluency of non-native speakers of Spanish. Concentrates on the active expansion of vocabulary, as well as listening and speaking skills in general. Introduction to Spanish dialect variations of both American and Peninsular Spanish. Prerequisite: Spanish 10B.

**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. Prerequisites: Spanish 2C or 5 or equivalent; English majors only. (VII-B)

### UPPER-DIVISION

**100A, B, C, D, E Introduction to Spanish, Latin American, and Chicano/Latino Literature.** Survey of major works of Peninsular, Latin American, and Chicano/Latino literature that contextualizes representative works in their historical period and introduces students to methods of literary analysis. Prerequisites: Spanish 2C or 5 or equivalent; Spanish 10A.

**100A Introduction to Medieval and Golden Age Spanish Literature (4). (VII-B)**

**100B Introduction to Modern Spanish Literature: Eighteenth – Twentieth Centuries (4). (VII-B)**

**100C Introduction to Spanish American Literature: Pre-Hispanic to Nineteenth Century (4). (VII-B)**

**100D Introduction to Spanish American Literature: Nineteenth and Twentieth Centuries (4). (VII-B)**

**100E Introduction to Chicano and U.S. Latino Literature (4). (VII-A)**

**105 Theory and Practice of Bilingual Education (4).** Theoretical and historical framework for bilingual education as practiced in the United States. Theoretical research regarding bilingual education and language acquisition. Analysis of historical context in which bilingual education is grounded. Examination of various changes in government policy and perceptions. Prerequisite: Spanish 2C or 5; Linguistics 3 recommended. Formerly Spanish 100A.

**106A 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. Prerequisite: Spanish 2C or 5. Same as Education 140A. Formerly Spanish 100B.

**106B 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 versus nonnative Spanish speakers. Prerequisite: consent of instructor. Same as Education 140B. Formerly Spanish 115.

**107 Advanced Spanish Grammar (4).** Designed primarily for students who have demonstrated a substantial level of proficiency in their studies of the Spanish language. Takes a thorough approach to advanced grammatical problems, in order to assist students in their mastery of the elements of the Spanish language. Prerequisite: Spanish 10B.

**110A Peninsular Civilization (4).** Each quarter focuses on a different country or topic. Prerequisite: Spanish 10B or equivalent. May be repeated for credit as topics vary. Same as Women's Studies 170SE when topic is appropriate. (VII-B)

**110B Latin American Civilization (4).** Each quarter focuses on a different country or topic. Prerequisite: Spanish 10B or equivalent. May be repeated for credit as topics vary. Same as Women's Studies 170SF when topic is appropriate. (VII-B)

**110C Chicano History (4).** Explores the cultural history of the Chicano from pre-Columbian cultures, Colonial and Modern Mexico, to the Chicano experience in the United States. Prerequisite: Spanish 10B or equivalent. Same as Women's Studies 170SG when topic is appropriate. (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. Prerequisite: Spanish 113A; Linguistics 3 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. Spanish 114 and Education 140C may not both be taken for credit.

**116 Medieval Spanish Literature (4).** Medieval literature in Spain from ninth century to 1500. Works of lyric and epic poetry, prose fiction, and non-fiction. Substantial historical and cultural background explored. Prerequisite: Spanish 10B. May be repeated for credit as topics vary. (VII-B)

**121 Golden Age Literature (4).** Golden Age literature in Spain including the Renaissance and Baroque periods. Works of poetry, narrative, and theater. Historical and cultural background. Prerequisite: Spanish 10B. May be taken for credit three times as topics vary. Formerly Spanish 117. (VII-B)

**122 Nineteenth-Century Spanish Literature (4).** The main literary and ideological trends in nineteenth-century Spain, including romanticism, realism, and naturalism. Prerequisite: Spanish 10B. May be taken for credit three times as topics vary. Formerly Spanish 119.

**123 Twentieth-Century Spanish Literature (4).** Twentieth-century Spanish authors. Works of poetry, narrative, or theater. Historical context of the period and principles of literary theory. Prerequisite: Spanish 2C or 5 or equivalent; Spanish 10A-B recommended. May be taken for credit three times as topics vary. Formerly Spanish 120.

**130A Spanish-American Prose Fiction 1830–1920 (4).** Development of the novel and short story from Romanticism through Modernism. Prerequisite: Spanish 2C or 5 or equivalent; Spanish 10A-B recommended. (VII-B)

**130B Spanish-American Prose Fiction 1920–1950 (4).** The search for a national identity in the context of European values and indigenous tradition. Criollismo, Surrealism, and Existentialism. Prerequisite: Spanish 2C or 5 or equivalent; Spanish 10A-B recommended. (VII-B)

**130C Spanish-American Prose Fiction 1950 to present (4).** Magic Realism, the Fantastic, Self-Conscious Fiction. Mass media techniques, linguistic play. Borges, Rulfo, García Márquez, Cortázar, Puig. Prerequisite: Spanish 2C or 5. (VII-B)

**131A Spanish-American Poetry (4).** The study of a particular movement, period, or theme, emphasizing poetry, e.g., modernismo, Vanguardismo, Post-Vanguardismo, or women's literature. Prerequisite: Spanish 2C or 5. May be repeated for credit as topics vary. (VII-B)

**131B Spanish-American National Literature (4).** The literature of specific countries with emphasis on the socio-historical contexts. Representative texts from all genres, including the essay. Prerequisite: Spanish 2C or 5. May be repeated for credit as topics vary. (VII-B)

**131C Spanish-American Theatre (4).** The twentieth-century Spanish-American theatre in one or more countries. Structured around movements, chronological periods, or themes. Prerequisite: Spanish 2C or 5. (VII-B)

**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.

**140A, B Chicano Literature (4, 4).** Focus on contemporary Chicano literature; in relation to Chicana literature, women's literature, American literature, and Latino literature. Prerequisite: Spanish 2C or 5 or equivalent; Spanish 10A-B highly recommended. Same as Women's Studies 170SA, 170SB when topic is appropriate. Formerly Spanish 133A, B. (VII-A)

**142 Chicano Culture (4).** Current research and perspectives on different aspects of Chicano culture: political, economic, sociological, artistic, and folkloric. Prerequisite: Spanish 2C or 5 or equivalent; Spanish 10A-B recommended. May be taken twice for credit when topics vary. Formerly Spanish 134. (VII-A)

**143 Latino Literatures of the United States (4).** Acquaints non-Spanish majors with the literatures written in the United States by Spanish-speaking sectors of our population. In English. Does not satisfy Spanish major or minor requirements. May be repeated for credit as topics vary. Formerly Spanish 135. (VII-A)

**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)

**161 Creative Writing Workshop (4).** Focuses on the development of writing techniques based on discussion of student short fiction and poetry and relevant literary texts. Writing may be in English, Spanish, or bilingual. Prerequisite: consent of instructor.

**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. Prerequisite: Spanish 2C or 5. May be repeated for credit as topics vary.

**185 Selected Topics in Spanish Literature (4).** Selection of representative topics in Spanish literature. Prerequisite: Spanish 2C or 5. May be repeated for credit as topics vary. Same as Women's Studies 170SD when topic is appropriate. (VII-B)

**186 Selected Topics in Latin American Literature (4).** Selection of representative topics in the history of Latin American literature. Prerequisite: Spanish 2C or 5. 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.

**199 Independent Study (4) F, W, S.** Research paper required. Prerequisite: consent of instructor. May be repeated for credit as topics vary. Formerly Spanish 190.

## GRADUATE

In addition to the following courses, graduate students might find Humanities 200A, B, C (History and Theory) and Humanities 220A, B, C (Studies in Literary Theory and Its History) of special interest.

**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 *Poema 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.
- 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.
- 225 Modern Spanish Literature (4) S.** Overview of modern Spanish literature and culture in relation to the concept of modernity. Focuses on major literary texts from the eighteenth century to the present. Study of the links between literature and other cultural developments of the time. Works by Feijoo, Jovellanos, Galdós, Unamuno, Ortega y Gasset.
- 227 Chicano/Latino Autobiography (4) S.** A study of autobiographies authored by Latinos in North America from the sixteenth to the twentieth century. Focuses on theories of ethnogenesis and difference. Oral report, paper, and final exam.
- 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.
- 231B Modern Latin American Theatre (4) S.** Contemporary theatre from one or more countries. Emphasis on theatrical discourse-producers-audience and society. 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 Marfatégui, 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 Díaz 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.
- 239A Introduction to Literary Theory (4) F.** Through selected readings of key figures in intellectual history (Aristotle, St. Augustine, Descartes, Kant, Hegel, Marx, Nietzsche, William James, and Freud), traces the development of Western literary critical principles from Aristotle to the twentieth century. Lectures in Spanish; term paper, oral presentation, final exam. Formerly Spanish 239.
- 239B Methods of Literary Criticism: Twentieth Century (4) W.** Study of major critical movements of the twentieth century, from Modernism's varied trends to those of the Postmodern/Postcolonial period. Emphasis on the development of prior critical discourses (Spanish 239A: Freudianism, Marxism, Phenomenology) as well as revisionary theories. Prerequisites: Spanish 239A and graduate standing.
- 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.
- 252 Cultural Readings: Selected Topics (4) F.** Considers the artistic discourses manifested by the various Latino cultures. Film, art, music are some of the mediums of cultural expression to be analyzed. May be taken for credit twice 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. May be repeated for credit as topics vary.
- 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.



# DEPARTMENT OF INFORMATION AND COMPUTER SCIENCE

Michael J. Pazzani, **Chair**

444 Computer Science

Undergraduate Counseling: (714) 824-5156

Graduate Counseling: (714) 824-5597

World Wide Web: <http://www.ics.uci.edu/>

## Faculty

- Mark S. Ackerman, Ph.D. Massachusetts Institute of Technology, *Assistant Professor of Information and Computer Science* (computer-supported cooperative work, information retrieval, sociology of computing, human-computer interaction)
- Nader Bagherzadeh, Ph.D. University of Texas at Austin, *Associate Professor of Electrical and Computer Engineering and of Information and Computer Science* (parallel processing, distributed computing, computer architecture, neural networks)
- Yannis Bakos, Ph.D. Massachusetts Institute of Technology, *Associate 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, *Professor of Information and Computer Science and of Electrical and Computer Engineering* (parallel processing; multiprocessor architectures; semantic and object-oriented database systems)
- Douglas M. Blough, Ph.D. The Johns Hopkins University, *Associate Professor of Electrical and Computer Engineering and of Information and Computer Science* (parallel architectures, fault-tolerant computing, computer architecture)
- Alfred M. Bork, Ph.D. Brown University, *Professor Emeritus 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, *Associate 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, *Associate Professor of Information and Computer Science* (computational geometry, analysis of algorithms, data structures)
- Nikil Dutt, Ph.D. University of Illinois, *Associate 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, *Associate Professor of Information and Computer Science* (analysis of algorithms, computational geometry, graph theory)
- Julian Feldman, Ph.D. Carnegie Institute of Technology, *Professor Emeritus 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)
- Michael Franz, D.Sc. Techn. Swiss Federal Institute of Technology (ETH) Zurich, *Assistant Professor of Information and Computer Science* (programming languages and their implementation; extensible systems; software architectures, component-ware and portable software that migrates across computer networks)
- Daniel D. Gajski, Ph.D. University of Pennsylvania, *Professor of Information and Computer Science and of Electrical and Computer Engineering* (computer and information systems, software/hardware codesign, algorithms and methodologies for embedded systems, CAD environments, science of design)
- Richard H. Granger, Ph.D. Yale University, *Professor of Information and Computer Science and of Cognitive Sciences* (computational and cognitive neuroscience)
- Jonathan T. Grudin, Ph.D. University of California, San Diego, *Associate Professor of Information and Computer Science* (computer-supported cooperative work; interactive systems development; human-computer interaction)
- Vijay Gurbaxani, Ph.D. University of Rochester, *Associate 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 and of Electrical and Computer Engineering* (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)
- Sandra S. Irani, Ph.D. University of California, Berkeley, *Assistant Professor of Information and Computer Science* (analysis of algorithms; on-line algorithms; graph theory and combinatorics)
- Dennis F. Kibler, Ph.D. University of California, Irvine, and Ph.D. University of Rochester, *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 and Computer 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 of Management* (economics of computing; policies for computer management and use in organizations; public policy and social aspects of computer use)
- Rob Kling, Ph.D. Stanford University, *Professor of Information and Computer Science and of 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 Information and Computer Science, and Director of the Center for Research on Information Technology and Organizations* (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, *Associate Professor of Electrical and Computer Engineering and of Information and Computer Science* (VLSI structures; design automation of digital circuits)
- Tomas Lang, Ph.D. Stanford University, *Professor of Electrical and Computer Engineering and of Information and Computer Science* (computer architecture, digital design, numerical processors and multiprocessors)
- Richard H. Lathrop, Ph.D. Massachusetts Institute of Technology, *Assistant Professor of Information and Computer Science* (modeling structure and function, machine learning, intelligent systems and molecular biology, protein structure/function prediction)
- Kwei-Jay Lin, Ph.D. University of Maryland, *Associate Professor of Electrical and Computer Engineering and of Information and Computer Science* (real-time systems, distributed systems, object-oriented databases, scheduling theory, computer networks)
- 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, Information and Computer Science, and Cognitive Sciences* (learning and memory, synaptic change, computational neuroscience)
- Alexandru Nicolau, Ph.D. Yale University, *Professor of Information and Computer Science and of Electrical and Computer Engineering* (architecture, parallel computation, and programming languages and compilers)
- Michael J. Pazzani, Ph.D. University of California, Los Angeles, *Chair and Associate 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)
- David F. Redmiles, Ph.D. University of Colorado, *Assistant Professor of Information and Computer Science* (design environments, human-computer interaction, usability engineering, knowledge-based support)
- Debra J. Richardson, Ph.D. University of Massachusetts, Amherst, *Associate Professor of Information and Computer Science* (software engineering; program testing; life-cycle validation; software environments)

- Isaac Scherson, Ph.D. Weizmann Institute of Science (Israel), *Professor of Information and Computer Science and of Electrical and Computer Engineering* (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)
- William Rodman Shankle, M.D. Brown University Medical School, *Assistant Adjunct Professor of Neurology and of Information and Computer Science* (application of learning systems, informatics, image processing, and other methods of artificial intelligence to the diagnosis, treatment, and management of persons with memory problems due to Alzheimer's disease and related disorders)
- Phillip C.-Y. Sheu, Ph.D. University of California, Berkeley, *Associate Professor of Electrical and Computer Engineering and of Information and Computer Science* (database systems, multimedia information management, simulation, object-oriented systems)
- Padhraic Smyth, Ph.D. California Institute of Technology, *Assistant Professor of Information and Computer Science* (statistical pattern recognition, automated analysis of large data sets, applications of probability and statistics to problems in artificial intelligence)
- Thomas A. Standish, Ph.D. Carnegie Institute of Technology, *Professor of Information and Computer Science* (algorithms and data structures)
- Einar A. Stefferud, M.B.A. University of California, Los Angeles, *Assistant Adjunct Professor of Information and Computer Science* (strategic management planning for internetwork environments; standards development; electronic mail systems)
- Tatsuya Suda, Ph.D. Kyoto University, *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, *Professor of Information and Computer Science* (software engineering, user interfaces, environments, team support)
- Wei Kang (Kevin) Tsai, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Electrical and Computer Engineering and of Information and Computer Science* (data communication networks, neural networks, parallel algorithms and architectures, CAD for VLSI systems engineering)

### 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)
- 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)

Computers and communications technologies have changed the world. From the largest information processing problems to the control of the engines in our automobiles, these technologies play a vital role. This revolution is only a few decades old, but already futurists talk about the twenty-first century in terms of the "information economy," the "information society," and even the "information age." UCI's Department of Information and Computer Science (ICS) is in the center of this revolution, with programs of instruction and research in a variety of areas within computer and information technology.

ICS faculty cover a broad spectrum of important topics in their research and teaching interests including: formal and mathematical methods for improving the performance and power of computational systems; advanced processes for design and engineering of computer systems and communication networks; the software that

makes the computer useful, with particular concern for the design and engineering of large software systems for critical applications; the fascinating area of intelligence, and the connections between natural and artificial intelligence; the economics, sociology, and application of the technology in modern organizations, and the use of interactive multimedia in computer systems that facilitate learning. The faculty are concerned with more than just technology, however. The fundamental intellectual features of the information and computer sciences are applicable to many scholarly and scientific fields. ICS is truly an interdisciplinary department, simultaneously grounded in science and oriented toward application.

Computer resources available for campuswide use include the Maspar and Hypercube parallel processors, which are made available by various departments at UCI. Additionally, systems available from the UCI Office of Academic Computing (OAC) include Convex C3840 (UNIX), DEC VAXstation (VMS), Sun SPARC servers, numerous workstations, and color scanners and printers. Campus dial-up lines provide support for home connections to many of these systems as well as systems within the Department of Information and Computer Science. X terminals, Pentium PCs, and Power Macintoshes also are available via laboratories open 24 hours a day. Additional information may be obtained by calling OAC at (714) 824-6116 or by sending electronic mail to oac@uci.edu.

Computer resources within the Department of Information and Computer Science include a wide range of instructional and research machines. For instructional computing, these include two UNIX servers (a Sun SPARCserver 1000 multiprocessor and a Sun 670MP multiprocessor), 50 SPARC workstations, 180 Macintoshes, and some additional PCs and general purpose terminals. For research computing, resources include a Sequent multiprocessor and over 250 varying types of Sun workstations and servers.

### DEGREES

Information and Computer Science ..... B.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. Other important factors are considered (see page 55).

### CAREERS FOR THE ICS MAJOR

Many career opportunities exist for students with an undergraduate degree in computer science. Entry-level positions have included systems programmer, systems analyst, network administrator, management information systems consultant, and software engineer. The Career and Life Planning Center provides services to UCI students and alumni including career counseling, information about job opportunities, and a career library, as well as workshops on resume preparation, job search, interview techniques, and internship opportunities. Additional information is available in the Career and Life Planning Center section.

### Undergraduate Program

The ICS undergraduate program prepares students for professions and careers in industry and provides students with the tools for advanced education at the graduate level. Many ICS graduates follow career paths immediately after graduation; others go on to advanced study in a variety of fields, including computer science,

management, engineering, law, medicine, and so on. An ICS undergraduate education is a blend of scholarship, science, technology, and practical application that forms an excellent foundation for professional life in the twenty-first century and prepares a student with serviceable skills useful for a lifetime.

The basis of the ICS undergraduate program is a set of fundamental courses in mathematics and computer science, supplemented by breadth requirements from other academic disciplines. A premium is placed on writing and quantitative skills. Students start early with hands-on experience with advanced computing systems, and intense use of computer and network technologies continues throughout the undergraduate program. ICS students study data organization, algorithm design and analysis, design and organization of hardware and network systems, software engineering, artificial intelligence, social aspects of system design and use, and management of technology. In the process, students work with state-of-the-art hardware and software technologies, learn several contemporary programming languages, and make extensive use of computer-based utilities such as electronic mail. ICS students can send and receive electronic mail over the Internet, read and respond to Internet bulletin boards, and browse the World Wide Web.

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 may also wish to consult the list of courses offered by the School of Engineering.

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.

The ICS Undergraduate Student Affairs Office is staffed by professional academic counselors and peer advisors. These individuals are available to assist students with program planning, questions on University and 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 are 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, C, C++, Ada, or another modern, high-level language. 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. Completion of one course in approved lower-division writing.

NOTE: 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.

To ensure admission consideration for the fall quarter, students should be sure to file their application by November 30 of the prior year. The selection criteria include grades, test scores, and other considerations. Note, however, that in cases where the number of incoming freshmen and advanced standing students who elect ICS as a major exceeds the number of positions available, not all applicants will be accommodated.

Alternately, students can come to the campus without declaring a major and take the courses necessary to meet the ICS change-of-major requirements. Once the course work is completed, and the other conditions for changing majors met, students may then apply for a change of major to ICS. Additional information is available from the ICS academic counselors.

## REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57-61.

### Information and Computer Science Major Requirements

**Lower-division** (some or all of these are prerequisites for required upper-division ICS courses):

A. Mathematics 6A-B-C and 2A-B-C.

B. ICS 21, 22, 23, 51, 52.

### Upper division:

A. ICS 121, 131, 141, 151, 161, 171.

B. One intermediate course in each of two areas, selected from ICS 132; 142, 143, 144, 147, 148; 152, 153; 162, 163, 164; 172, 173. (However, 142 and 143 may both be used to satisfy the intermediate course requirement.)

C. Two project courses selected from ICS 125B, 135, 145A or 145B, 155A or 155B, 156, 165, 175A or 175B.

D. Three upper-division mathematics courses selected from the following groups of courses such that at least two of the three courses are selected from the same group: Mathematics 105A-B, 107 (with accompanying laboratories); 120 A-B, 121A-B, 123; 130A-B-C, 131A-B-C, 132A-B-C (with accompanying laboratories); 140A-B-C-D, 146, 147; 162A-B; 171A-B-C; 150, 151, 152, Philosophy 105A-B-C.

**Specializations:** Students may elect to complete one or more specializations within the major in Information and Computer Science. Courses taken for a specialization may be used to satisfy upper-division requirements for the major. Courses may also be used to satisfy requirements of more than one specialization, subject to the following limitation: four of the courses used to satisfy the requirements for any one specialization may not be used to satisfy the requirements for any other specialization.

One individual study course (ICS 198 or 199) in the area of specialization may be substituted for one designated course (indicated by \*) in the specialization requirements, upon prior approval of the ICS Associate Chair for Undergraduate Affairs.

*Artificial Intelligence:* four courses\* selected from ICS 163 or 165, 170-179 (excluding 171).

*Computer Systems:* four courses selected from ICS 140-159 (excluding 141 and 151).

*Implementation and Analysis of Algorithms:* two courses selected from ICS 163, 164, 165; two courses\* selected from ICS 125B, 145A, 145B, 156, 175A, 175B.

*Information Systems:* ICS 125B, 132, 135; one course\* selected from ICS 137, 153, 175B, 184.

*Networks and Distributed Systems*: three courses selected from ICS 143, 147, 148, 153; one course\* from ICS 145B, 156.

*Software Systems*: ICS 125B, 142, 143, 145A, 145B.

### 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 H197), which provides an introduction to research areas in the Department, followed by a minimum of two quarters of independent supervised work (ICS H198). Passing these two 198s counts for one of the project courses required for the major, provided that the other project course taken is in a different area. 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 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 host universities and colleges throughout the world. Additional information is available in the Center for International Education 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.

## DOCTOR OF PHILOSOPHY PROGRAM

The graduate program leads to a Ph.D. degree in Information and Computer Science with a concentration in one of the following five areas: Artificial Intelligence (AI); Computer Systems Design (CSD); Computing, Organizations, Policy, and Society (CORPS); Software; or Algorithms and Data Structures (Theory). Additionally, an area of specialization other than one of these concentrations may be chosen with the approval of the graduate advisor.

The program is research oriented and encourages students to work together with faculty to solve advanced problems in computer science. The 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

Applicants will be evaluated on the basis of their prior academic record and their potential for creative research and teaching in Information and Computer Science. Applicants are expected to have (1) skills in computer programming at least equivalent to those obtained in a college-level course in programming, and (2) skills in mathematics equivalent to those obtained in complete college-level courses in logic and set theory; analysis; linear algebra and modern algebra; or probability and statistics. Computer Science undergraduate training is not required but is strongly encouraged; familiarity with programming languages, data structures, analysis of algorithms, automata theory or formal languages, and computer architectures is very helpful.

Applicants must take the GRE General Test and are strongly encouraged to take one Advanced Subject Test. Application forms and additional information about the graduate program in Information and Computer Science may be obtained by writing to the graduate counselor in the Department.

### Financial Assistance

Financial assistance is available to students in the form of scholarships, teaching assistantships, and research assistantships. More than half of the doctoral students in residence receive financial assistance.

### Teaching Requirements

All ICS doctoral students are required to participate in teaching activities before being advanced to candidacy. Teaching activities in summer or night school or service at other universities may be accepted in fulfillment of this requirement.

### Course Substitutions

A student who has taken relevant graduate courses at UCI or another university may petition to have a specific course certified as equivalent to one which satisfies ICS requirements. The petition should describe the two courses and can be approved either by a committee composed of the student's faculty advisor, the ICS Associate Chair for Graduate Studies, and a faculty member who is in the area in which the course is taught or by the ICS Graduate Policy Committee.

### Examinations and Dissertation

Each student must present a research talk to a group of faculty and graduate students and pass a comprehensive examination which will be evaluated by the faculty. The comprehensive examination and all course requirements must be satisfied prior to the student's application for advancement to candidacy. Information on the selection of committees, advancement to candidacy, development of a doctoral dissertation, and final examination on the dissertation is available from the ICS Associate Chair for Graduate Studies.

## CONCENTRATION IN ARTIFICIAL INTELLIGENCE (AI)

Artificial intelligence has as its twin goals the understanding of living intelligence and the creation of intelligent artifacts. Inherently interdisciplinary, work in the field draws heavily on solid results from the theory of computation, cognitive and behavioral psychology, and neuroscience. Topics range from “bottom-up” modeling of brain operation and its emergent function to high-level operations such as problem-solving, learning, language understanding, and reasoning.

The ICS artificial intelligence group maintains a balance between these two concerns, recognizing that each contributes to the other. Of particular importance to AI researchers in ICS are findings from psychology and neurobiology that suggest computational algorithms, and analyses of such algorithms that suggest explanations for capabilities and limitations of human cognition. The ICS artificial intelligence group is also distinguished by its concern with machine learning—the mechanisms by which knowledge is acquired through experience.

### Required Courses

The following courses must be passed with a grade of B or better: Seminar in Research in ICS (ICS 202); two courses of Special Topics in Information and Computer Science (ICS 280) taught by AI area faculty; three courses selected from: Introduction to Artificial Intelligence (ICS 270A), Machine Learning (ICS 273A), Network-based Reasoning/Constraint Networks (ICS 275A), or Neural Networks (ICS 276A); two additional courses from: Advanced Artificial Intelligence Programming (ICS 270B), Knowledge Representation in AI (ICS 271A), Qualitative Reasoning (ICS 271B), Problem Solving and Planning (ICS 272A), Natural Language Processing (ICS 272B), Diagnosis (ICS 272C), Network-based Reasoning/ Belief Networks (ICS 275B), Seminar in Models of the Brain (ICS 276B), Cognitive and Computational Neuroscience (ICS 276C); and five graduate courses outside of Artificial Intelligence, at least three of which must be within the ICS Department.

### Paper Requirement

Each student must write two research papers of publishable quality.

## CONCENTRATION IN COMPUTER SYSTEMS DESIGN (CSD)

New application areas are placing increasingly challenging demands on existing computer systems. At the same time, advanced technologies are being developed that make the design and manufacturing of computer systems faster and cheaper. The current trend in computerization is toward application-targeted systems that solve specific problems well. The development of such systems requires an understanding of the complex interactions between applications, software, and hardware.

The Computer Systems Design area addresses the various aspects of bridging the gap between the demands of new applications and available technology. It is designed to produce computer scientists with an increased awareness of the demands imposed on computers by the application domains which have traditionally been viewed as extrinsic to computer science. This application sensitivity will give students a unique advantage in the increasingly important area of integrated software/hardware computer and information systems and will prepare them to meet the challenges of real-world problems.

### Required Courses

Computer Systems Design is a broad concentration and is divided into two specializations: (1) Design Science, and (2) Parallel, Distributed, and Network Systems. The course requirements for Computer Systems Design have been selected to encourage students to take courses in either one of these two speciality areas.

The following courses must be passed with a grade of B or better: Seminar in Research in ICS (ICS 202); at least three quarters of either Seminar in Parallel Distributed and Network Systems (ICS 249) or Seminar in Design Science (ICS 259); five graduate courses outside of Computer Systems Design but within ICS, no more than three of which may be in one area; and five core courses selected from the following (four from the student's area of specialization and one from the other area):

**Design Science:** Computer Systems Architecture (ICS 241), Digital System Verification and Testing (ICS 251), Introduction to Computer Design (ICS 252), Design Description and Modeling (ICS 253), VLSI System Design (ICS 254), Physical Design Automation (ICS 255), Design Synthesis (ICS 256), System Tools (ICS 257).

**Parallel, Distributed, and Network Systems:** Computer Systems Architecture (ICS 241), Parallel Computer Architectures and Languages (ICS 242), Computer Networks (ICS 243), Parallel Computing (ICS 244), High-Performance Architectures and Their Compilers (ICS 245), Computer Systems Modeling and Performance Evaluation (ICS 246), Distributed Computer Systems (ICS 247).

### Paper Requirement

Each student must write two research papers of publishable quality.

## CONCENTRATION IN COMPUTING, ORGANIZATIONS, POLICY, AND SOCIETY (CORPS)

UCI is an internationally recognized center for research on the social and managerial dimensions of computerization. One stream of this research examines the impacts and policy issues that surround computerization. A second stream, which is longitudinal and organizational in emphasis, examines the ways in which users develop computing technologies, including workplace negotiations and coalitions. CORPS researchers study these topics in various public and private settings including government agencies, large and small commercial enterprises, and universities.

CORPS has recently added research focusing on computer-supported cooperative work and human-computer interaction. Examples of specific interests are social and behavioral factors affecting the design and adoption of groupware, and technical support for organizational learning and memory. Work in these areas consists of both empirical research and the building of prototype systems.

Other projects focus on information technologies such as digital libraries and decision support systems. CORPS researchers focus on understanding the “reality” of computerization, in contrast with utopian promises and anti-utopian fears. A large fraction of the research is empirical, and is conducted *in vivo*—in organizations or other social settings where computer-based systems are developed and used routinely. The empirical studies of work organization and organizational control patterns also have an important theoretical dimension. Other theoretical studies conducted by CORPS researchers build upon a broad body of empirical studies of the social dimensions of information technologies.

### Required Courses

The following courses must be passed with a grade of B or better: Seminar in Research in ICS (ICS 202); Social Analysis of Computing (ICS 230); at least three quarters of Seminar in Research on Social Analysis and Information Systems (ICS 239); four courses chosen from: Computer Supported Cooperative Work (ICS 233), Computerization, Work, and Organizations (ICS 234A), Theories of Computerization and Information Systems (ICS 234B), Qualitative Research Methods in Information Systems (ICS 235A), Quantitative Research Methods in Information Systems (ICS 235B); and five or six graduate courses outside of CORPS, only one of which may be ICS 280.

The five or six courses are chosen as follows. A student who does not elect to take an optional minor outside of ICS must take five

graduate courses within ICS in at least two areas other than CORPS. A student who elects to take a minor outside of ICS must take three graduate courses within ICS in at least two areas other than CORPS, in addition to three graduate courses outside of ICS. The minor outside of ICS consists of three graduate courses which form a coherent area of study.

### Paper Requirement

Each student must write a survey paper and a research paper of publishable quality.

## CONCENTRATION IN SOFTWARE

The ICS software faculty is engaged in fundamental studies, development, integration, and empirical evaluation of technologies in four key subareas of software and software engineering research: modeling and analysis; environments; advanced methods and tools; and evaluation.

The modeling and analysis of software systems has been in existence the longest and is a traditional part of software development. Concerns of correctness and performance are considered here, as well as tasks such as debugging.

Software development environments can promote efficient application of tools, provide uniform user interfaces, manage the multitude of objects created during the life of a software system, and be proactive in supporting development and maintenance activities. The challenge here is in creating extensible environment architectures which incorporate the best features from early environments, satisfy the demands of new tools, and integrate analysis, design, and management methods. The emphasis on advanced methods and tools includes work on novel software development processes and their representation and advanced tools that automate significant portions of processes. The emphasis of the evaluation research area is to study, develop, and apply methods for characterizing and evaluating the effect of software technologies on the software development process, the delivered software product, and the software developers. Controlled empirical studies play a central role in the assessment of software technologies and in the advancement of theories of software development.

**Background:** Students must have basic competency in the following computer science topics: programming language concepts, data structures, analysis of algorithms, automata theory or formal languages, artificial intelligence, computer architecture, and operating systems. The software faculty will evaluate, upon entry to the Ph.D. program, whether a student has satisfied these requirements through courses taken previously (e.g., at the undergraduate level) or through equivalent experience. Satisfaction of any unfulfilled requirements may be achieved through either graduate or undergraduate classes in an individualized program worked out with a software area graduate advisor.

### Required Courses

The following courses must be passed with a grade of B or better: Seminar in Research in ICS (ICS 202); Software Engineering (ICS 221A); Formal Methods in Software Engineering (ICS 222); at least three quarters of Seminar in Software (ICS 229); two courses from: Software Analysis and Testing (ICS 224A), Software Processes (ICS 225), Software Measurement (ICS 226), Software Environments (ICS 228); two other courses from the Software area (ICS 220 - 228, including ICS 280s taught by Software area faculty); and four graduate courses outside of Software, including Fundamentals of Scientific Research (ICS 201) and Models of Computing (ICS 203), drawn from a list maintained by the faculty.

### Paper Requirement

Each student must write a survey paper with an extensive bibliography and a research paper of publishable quality.

## CONCENTRATION IN ALGORITHMS AND DATA STRUCTURES (THEORY)

The goal of research in theoretical computer science is to produce results, supported by rigorous proof, about problems dealing with computers and their applications. The questions to be investigated are often motivated by practical problems, but the goal of understanding the underlying combinatorial properties of the problem is often as important as producing a solution of immediate applicability. The actual problems to be solved are often very complicated, so researchers seek some abstraction that can be rigorously studied. In particular, they often seek to investigate the fundamental combinatorial structure of a problem abstracted away from the original physical setting. For example, the problem of placing a set of files onto as few floppy disks as possible without exceeding their storage capacity is fundamentally the same as the problem of loading a set of items onto as few trucks as possible without exceeding their weight limit. Many problems, from a variety of application areas, fall into the category of efficient algorithm design.

A key property of work in this area is its emphasis on the amount of resources required by a given algorithm; this is called the complexity of the algorithm. The resource most commonly considered is time, but other resources often considered are the amount of memory required and, in the case of parallel computation, the number of processors required. For many problems, an efficient solution has been obtained only after deep insights into the nature of the problem. For many problems, the efficiency of the best solution possible remains unknown.

Research in algorithms and data structures grapples with such questions. It is a young science with an inherently interdisciplinary flavor. Problems to be investigated have come from a variety of sources, such as VLSI design, image processing, genetics, transportation, and artificial intelligence. Solution methods are brought to bear from areas such as discrete applied mathematics, probability theory, and a rich body of insights developed within theoretical computer science. The goal of the research, as in mathematics, is to produce results supported by rigorous proof; the emphasis on complexity gives this area its unique flavor. Results that first might appear to be only of theoretical value are sometimes of profound relevance to practical problems.

### Required Courses

The following courses must be passed with a grade of B or better: Seminar in Research in ICS (ICS 202); Data Structures (ICS 261); Automata Theory (ICS 262); Analysis of Algorithms (ICS 263); two courses from: Advanced Analysis of Algorithms (ICS 264), Graph Algorithms (ICS 265), Computational Geometry (ICS 266), Special Topics in ICS (ICS 280) taught by Theory faculty; and five graduate courses outside of Theory, at least three of which must be within ICS; if the student has an optional minor, at least two of these courses must be outside the minor.

### Paper Requirement

Each student must write a survey paper and a research paper of publishable quality.

## Courses in Information and Computer Science

### BREADTH COURSES FOR NONMAJORS

Nonmajors may also take other ICS courses for which they have the prerequisites.

**1A Programming and Problem Solving I (4) F, 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. Provides an overview of computer science. Designed for non-ICS majors. No

credit allowed for ICS 1A after successful completion of ICS 21. ICS 1A and ICS 1P may not both be taken for credit. (V)

**1B Patterns of Problem Solving (4) F.** Introduction to patterns of reasoning in decision making and problem solving. Logic, probability, and decision-making tools as examples of quantitative and mathematical models. Role of values in problem solving. (V)

**1C Networked Information Discovery and Retrieval (4) S.** Information resources and communication tools available over the Internet, with emphases on the organization of computer networks and the information they provide, developing effective strategies for search and retrieval, and the synthesis of information obtained from diverse sources. (V)

**1D Introduction to Models (4).** The nature of models, their limitations, and their improvement. Use and construction of computer-based modeling tools. (V)

**1E Brain, Computation, and Thought (4).** Analysis of neural connections in the brain as electrical circuits to examine their computational properties, providing an elementary understanding of the nature of brain computation and the mental operations it naturally gives rise to. (V)

**1F What Can We Compute (4) W.** Introduction to problems computers can and cannot solve—and for solvable problems, the time and resources needed. Includes discussion of algorithms and procedures, Turing machines and undecidability, undecidable problems, problem classes, intractable problems. (V)

**1P Introduction to Computing (4) W.** Computer literacy, including an introduction to computer hardware, capabilities and limits of computers, and impacts of computing; and use of productivity tools, including word processors, spreadsheets, and communication programs. Laboratory exercises give students hands-on experience with productivity tools. No credit allowed for ICS 1P after successful completion of ICS 21. ICS 1A and ICS 1P may not both be taken for credit.

## LOWER-DIVISION

### COURSES FOR MAJORS AND NONMAJORS

**21 Introduction to Computer Science I (6) F, W.** 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 using a high-level programming language (primarily C/C++/Java). Introduces useful computer-based tools for analysis, expression, and discovery. No credit allowed for ICS 1A or 1P after successful completion of ICS 21. (V)

**22 Introduction to Computer Science II (6) W, S.** Second of a three-quarter introductory course. Covers in-depth concepts of programming and mathematical tools for analyzing programs. Topics include: combinatorics, program analysis and correctness, advanced structures, system design techniques, and programming paradigms. Prerequisite: ICS 21 with a grade of C or better. (V)

**23 Introduction to Computer Science III (6) F, S.** Third of a three-quarter introductory course. Builds on ICS 22 with respect to mathematical tools and analysis. Focuses on fundamental algorithms in computer science, basic data structures for primary and secondary memory, storage allocation and management techniques, data description, and design techniques. Prerequisites: ICS 22 with a grade of C or better; Mathematics 6A. ICS 23 and ICS 23E may not both be taken for credit. (V)

**23E Data Structures for Computer Engineers (4) F.** Focuses on algorithms of fundamental importance in computer engineering and their mathematical analysis, basic data structures for primary and secondary memory, storage allocation and management techniques, data description, and design techniques. For Computer Engineering majors only. Prerequisites: ECE40 and Mathematics 6A. ICS 23E and ICS 23 may not both be taken for credit.

**51 System Architectures (6) W, 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 22 with a grade of C or better; 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 23 with a grade of C or better.

**54 Programming for Multitasking Operating Systems (4) F.** Principles and concepts embodied in modern multitasking operating systems, including shells, filters, pipelines, programmability and scripting, extensibility, concurrent processing, and interprocess communication. Several integral tools and utilities are presented. Unix and C are used to provide concrete examples. Prerequisite: ICS 23. ICS 54 and ECE40 may not both be taken for credit.

**80 Special Topics in Information and Computer Science (2 to 4) W.** May be repeated for credit if title or topic varies.

**92 Engineering and Computer Science Educational Laboratory (ECSEL) (0) F, W, S.** Comprehensive academic support designed primarily for under-represented 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. Students may receive a maximum of 12 units of workload credit only. Pass/Not Pass Only. Same as Engineering E92.

**93 Strategies for Success in ICS (0) F, W.** Designed to develop good study skills in technical fields and the participation of students as active learners in their education. Topics include time management, analytical thinking, text analysis, academic survival strategies, and goal setting. Pass/Not Pass Only. Two units of workload credit only.

**H96 Freshman Honors Seminar (1).** Issues and conflicts from the philosophy and history of engineering and science, ethical responsibilities of engineers and scientists, the influence of diverse backgrounds, and the breadth of activities within the engineering and science disciplines. Various faculty participate each week. Pass/Not Pass only. Open only to Information and Computer Science freshmen students accepted into the Campuswide Honors program. Same as Physical Sciences H96 and Engineering EH96.

## 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, S.** 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. Prerequisite: ICS 52; Mathematics 2A-B-C and 6A-B; lower-division writing.

**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.

**131 Social Analysis of Computerization (4) F, W, S.** Introduction of computerization as a social process. Examines the social opportunities and problems raised by new information technologies, and the consequences of different ways of organizing. Topics include computerization and work life, privacy, virtual communities, productivity paradox, systems risks. Prerequisites: one course selected from ICS 1A, Engineering 10, Engineering ECE11, ICS 21, or equivalent; upper-division standing; satisfactory completion of the lower-division writing requirement.

**132 Organizational Information Systems (4) W, S.** 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.

**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.

**137 Electronic Publishing and Digital Archives (4).** Analytical introduction to electronic publishing and accessing electronic documents through digital archives. Examines how these communication media link authors and readers via diverse mediating institutions and information technologies. Concrete activities may use the World Wide Web and HTML. Prerequisite: ICS 131.



- 139 Technical Writing and Communication Skills (4) 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; Information and Computer Science majors only.
- 141 Programming Languages (4) F, 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; runtime representations, environments, and execution strategies. Prerequisites: ICS 51 and 52; Mathematics 6A-B; lower-division writing requirement.
- 142 Compilers and Interpreters (4) W.** Introduction to the theory of programming language processors covering lexical analysis, syntax analysis, semantic analysis, intermediate representations, code generation, optimization, interpretation, and run-time support. Prerequisite: ICS 141. Prerequisite for Computer Engineering majors only: ECE40.
- 143 Principles of Operating Systems (4) F.** 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. ICS 143 and ECE142 may not both be taken for credit.
- 144 High-Performance Computers and Program Optimization (4) S.** Analyzes the relationship between computer architecture and program optimization. High-performance and parallelizing compilers for RISC, Superscalar, and VLIW architectures are discussed. Prerequisite: ICS 51. Recommended: ICS 142.
- 145A Language Processor Construction (4) S.** 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.
- 145B Project in Operating System Organization (4) W.** Detailed specification and design of critical components of an actual operating system including a memory manager, a process server, and a file/I/O subsystem. Hardware/software tradeoffs. Emphasis on logical organization of system and communication. Prerequisite: ICS 143.
- 147 Network Programming (4) S.** Study of concepts, methods, and tools for the design and implementation of network-distributed applications. Topics include interprocess communication, communication protocols, transport layer interfaces, distributed application design (e.g., client/server), performance, and security. Prerequisites: ICS 51, 52, 54, and 153.
- 148 Distributed Computing (4).** Introduction to systems implemented within network-based computer architectures. Issues in distributed programming, operating systems, and applications. Specific topics covered include programming constructs, timing/coordination problems, data/service replication, transactions/concurrency control, fault-tolerance, recovery, file systems, security. Prerequisite: ICS 141. Recommended: ICS 153.
- 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 23 and 51; Mathematics 6A-B-C; satisfactory completion of the lower-division writing requirement.
- 152 Intermediate Computer Systems Architecture (4) W.** 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.
- 153 Computer Networks (4) F.** An introductory course on computer network architectures. Layering approach of communication protocols is introduced, and the function of each layer is explained. Various examples are shown from long-haul networks and local area networks to B-ISDN and high speed networks. Prerequisites: ICS 23 and 51; Mathematics 6A-B-C. Formerly ICS 157.
- 155A Logic Design Laboratory (4) W.** 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.
- 155B Computer Design Laboratory (4) S.** Design of basic computer components and small complete digital systems. Emphasis on practical use of Computer-Aided Design (CAD) tools, modeling of computer systems, and design practices in a laboratory environment. Prerequisite or corequisite: ICS 151.
- 156 Advanced Computer Networks (4).** Fundamental principles in computer networks are applied to obtain practical experience and skills necessary for designing and implementing computer networks, protocols, and network applications. Various network design techniques, simulation techniques, and UNIX network programming are covered. Prerequisite: ICS 153 or equivalent, or consent of instructor.
- 158 Parallel Architectures and Algorithms (4).** Parallel processing systems: emphasis on theory and application of arrays, trees, and hypercubes. Computational models and applications: sorting, integer arithmetic, matrix operations, fast Fourier transform, and others. Interconnection networks: framework for the description, analysis, and construction of hypercube-like interconnect. Prerequisite: ICS 152. ICS 161 recommended.
- 161 Design and Analysis of Algorithms (4) F, W, S.** Time and space complexity of algorithms. Models of computation, techniques for efficient algorithm design, effect of data structure choice on efficiency of an algorithm. Fast algorithms for problems such as sorting, set manipulation, graph problems, matrix multiplication, Fourier transforms, and pattern matching. NP-complete problems. Prerequisites: ICS 23 with a grade of C or better; ICS 51; Mathematics 2A-B-C and 6A-B-C; lower-division writing. Prerequisite for Computer Engineering majors only: ICS 23E.
- 162 Formal Languages and Automata (4).** Formal aspects of describing and recognizing languages by grammars and automata. Parsing regular and context-free languages. Ambiguity, nondeterminism. Elements of computability: Turing machines, random access machines, undecidable problems, NP-completeness. Prerequisites: ICS 23 and ICS 51; Mathematics 2A-B-C. Same as Linguistics 102.
- 163 Graph Algorithms (4) S.** Algorithms for solving fundamental problems in graph theory. Graph representations, graph traversal, network flow, connectivity, graph layout, matching problems. Prerequisite: ICS 161.
- 164 Principles of Computational Geometry (4) W.** Algorithms and data structures for geometric computation and graphics programming. Fundamental problems of computational geometry such as convex hulls, Voronoi diagrams, Delaunay triangulations, polygon partitioning, arrangements, geometric searching, hidden surface elimination, motion planning. Prerequisites: ICS 161 or equivalent; Mathematics 2A-B-C or equivalent.
- 165 Project in Algorithms and Data Structures (4) W.** 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, W.** Different means of representing knowledge and uses of representations in heuristic problem solving. Representations considered include predicate logic, semantic nets, procedural representations, natural language grammars, and search trees. Prerequisites: ICS 141 and Mathematics 2A-B-C, 6C.
- 172 Programming Techniques in Artificial Intelligence (4) W.** 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.
- 173 Neural Networks (4) W.** An introduction to the rapidly growing field of neural networks, i.e., algorithms derived from brain circuitry. Models covered include the Hopfield model, delta rule, perceptrons, backpropagation, competitive learning. Mathematical analyses, applications, and biological bases of neural network algorithms. Prerequisites: ICS 141; Mathematics 6C, 2A-B-C; satisfactory completion of the lower division-writing requirement.
- 175A Project in Artificial Intelligence (4) S.** Construction of a working artificial intelligence system. Evaluation of capabilities of the system including impact of knowledge representation. Prerequisite: ICS 172.
- 175B Introduction to Expert Systems (4).** 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.

**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) W.** 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. Prerequisite for Computer Engineering majors only: ICS 23E.

**186 Computer Graphics (4) W.** 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 (1 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. May be taken for credit for a total of eight units. Pass/Not Pass Only.

**H197 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. Prerequisite: participation in the ICS Honors Program or Campuswide Honors Program. Pass/Not Pass Only. Formerly ICS 197.

**H198 Honors Research (4) F, W, S.** Directed independent research in computer science for honors students. Prerequisites: ICS H197; upper-division standing and satisfactory completion of the lower-division writing requirement; participation in the ICS Honors Program or Campuswide Honors Program; consent of instructor.

**199 Individual Study (2 to 5) F, W, S**

## GRADUATE

**202 Seminar in Research in ICS (2) F.** Graduate orientation program and colloquium series. Includes talks by ICS faculty in all areas about their current research. Satisfactory/Unsatisfactory Only.

**205 Human-Computer Interaction (4).** The design of interfaces to computerized systems with special attention to the ways in which they are compatible with human cognitive capabilities and organizational practices.

**221A Software Engineering (4).** Study of the concepts, methods, and tools for the analysis, design, construction, and measurement of complex software-intensive systems. Underlying principles emphasized. State-of-the-art software engineering and promising research areas covered, including project management.

**222 Formal Methods in Software Engineering (4).** Examination of formal specification models, including algebraic/axiomatic, state-transition, model-based, operational, and temporal logics, along with their related analysis techniques. Formal models in software development are discussed as are different proof techniques.

**225 Software Processes (4).** Explores vehicles for modeling, coding, and analyzing software processes. Considers integration of software process programming approaches with traditional management issues. Explores the use of software process execution as a vehicle for effective integration of tools into environments.

**226 Software Measurement (4).** Software measurement provides a foundation for evaluation, analysis, feedback, and improvement in large software systems and processes. Discusses software measurement principles, techniques, systems, and applications. Examines empirical studies and introduces experimental design considerations.

**227 User Interfaces and Software Engineering (4).** Exploration of current developments in systems and tools for creation and run-time management of graphical user interfaces. Object specification, constraint specification and maintenance, control paradigms, separation of concerns, support infrastructures, and multi-media issues also are discussed.

**228 Software Environments (4).** Study of the requirements, concepts, and architectures of comprehensive, integrated, software development and maintenance environments. Major topics include process support, object management, communication, interoperability, measurement, analysis, and user interfaces in the environment context.

**229 Seminar in Software (2).** Current research and research trends in software. Forum for presentation and criticism by students of research work in progress. May be repeated for credit.

**230 Social Analysis of Computing (4).** The social and economic impacts of computing and information technologies on groups, organizations, and society. Topics include computerization and changes in the character of work, social control and privacy, electronic communities, and risks of safety-critical systems to people.

**233 Computer-Supported Cooperative Work (4).** The role of information technology in supporting work in teams and organizations. Examines various technologies, including group editors, communications and conferencing systems, and group decision support systems. Examines the possibilities, the limits, and social studies of their use and impacts.

**234A Computerization, Work, and Organizations (4).** Selected topics in the influence of computerization and information systems in transforming work and organizations. Theories of organization and organizational change. Processes by which diverse information technologies influence changes in work and organizations over short and long time periods. Prerequisite: ICS 230 or 233.

**234B Theories of Computerization and Information Systems (4).** Social and economic conceptions of information technology. Macrosocial and economic conditions that foster changes in information technologies. Social construction of information and computer technology in professional worlds. Theories of information technology and large-scale social change. Prerequisite: ICS 230 or 233.

**235A Qualitative Research Methods in Information Systems (4).** Introduction to qualitative research methods used to study computerization and information systems, such as open-ended interviewing, participant observation, and ethnography. Studies of the methods in practice through examination of research literature. Prerequisite: ICS 230 or 233.

**235B Quantitative Research Methods in Information Systems (4).** Quantitative research methods used to study computerization and information systems. Design of instruments, sampling, sample sizes, and data analysis. Validity and reliability. Longitudinal versus cross-sectional designs. Analysis of secondary data. Studies of the methods through examination of research literature. Prerequisites: basic knowledge of elementary statistics; ICS 230 or 233.

**239 Seminar in Research on Social Analysis and Information Systems (2).** Current research and research trends in topics covered within computing, organization, policy, and society. Topics may emphasize, but are not limited to, social and organizational analysis pertinent to computerized information systems, Computer Supported Cooperative Work (CSCW), and studies of emerging information technologies. May be repeated for credit.

**241 Computer Systems Architecture (4).** Study of architectural issues and their relation to technology and software: design of processor, interconnections, and memory hierarchies. Prerequisites: ICS 143 and 152 (or equivalent).

**242 Parallel Computer Architecture and Languages (4).** Introduction to the principles of parallel processing. Fundamental organizations of multiprocessor/multicomputer architectures and their programmability. Various approaches to developing software for such machines, including explicit language extensions, new programming paradigms and models of computation, and tools for program development.

**243 Computer Networks (4).** Discussion of various techniques to provide communication among processes in distributed environments. Topics covered include layering protocol architectures, packet switched networks, local area networks, interprocess communication, internetworking, high-speed networks, multi-media networks. Prerequisite: consent of instructor.

**244 Parallel Computing (4).** Definition of parallel processing systems. Theory and application of arrays, trees, and hypercubes. Computational models, applications: sorting, integer arithmetic, matrix operations, Fast Fourier Transform, and others. Interconnection networks: a framework for the description, analysis, and construction of hypercube-derived networks.

**245 High-Performance Architectures and Their Compilers (4).** Emphasis on the development of automatic tools (i.e., compilers/environments) for the efficient exploitation of parallel machines, and the trade-offs between hardware and software in the design of supercomputing and high-performance machines.

**246 Computer Systems Modeling and Performance Evaluation (4).** Performance modeling and evaluation using analytical and simulation techniques. Application to performance analysis of computer systems, networks, and parallel and distributed systems. Prerequisite: consent of instructor.

**247 Distributed Computer Systems (4).** Design and analysis techniques for distributed systems and their communication architectures. Topics covered include distributed system components, interprocess communications,

synchronization techniques, performance and reliability, and hardware-software interface. Prerequisite: consent of instructor.

**248 Queuing Theory (4).** Elementary queuing models; probability distributions, stochastic processes, work conservation laws, Markovian queues, product form results, embedded Markov chains. Advanced topics. Prerequisite: consent of instructor.

**249 Seminar in Parallel Distributed and Network Systems (2).** Current research and research trends in parallel distributed and network systems. Forum for presentation and criticism by students of research work in progress. May be repeated for credit.

**250 Fault-Tolerant Computing (4).** Various aspects of fault-tolerant computing systems. Includes hardware and software failures, reliability, mechanism to recover from failures. Prerequisite: consent of instructor. Same as Electrical and Computer Engineering 254.

**251 Digital System Verification and Testing (4).** Techniques for simulation, verification, and testing of hardware and mixed-mode systems. Fault models, test generation, algorithms, and functional testing. Design for testability. Prerequisite: consent of instructor.

**252 Introduction to Computer Design (4).** The methodology and use of CAD tools for computer design, accomplished by a lab in which students practice design using commercially available silicon compilers and other tools. Prerequisite: ICS 151 and 152 or equivalent.

**253 Design Description and Modeling (4).** Introduction to design modeling. Overview of design description languages and demonstration of design modeling at different abstraction levels. Techniques and methodologies for simulating and testing of design. Prerequisites: ICS 151, 152, and 241; or consent of instructor.

**254 VLSI System Design (4).** Overview of integrated circuit fabrication, circuit simulation, basic device physics, device layout, timing; MOS logic design; layout generation, module generation, techniques for very large scale integrated circuit design. Prerequisite: ICS 151 and 152 or consent of instructor.

**255 Physical Design Automation (4).** Overview of physical design algorithms for logic and physical partitioning, placement, and floor planning. Routing and layout verification. Prerequisite: ICS 252 and 234; or consent of instructor.

**256 Design Synthesis (4).** Methods, algorithms, and tools for design synthesis on different levels of design: logic, register-transfer, behavioral, and system. CAD laboratory assignments using design tools for exploration of different synthesis algorithms. Prerequisites: ICS 152 (or 241), or 252, or consent of instructor.

**257 System Tools (4).** Specification and requirement analysis of integrated systems. Support for early system-design decisions. Estimation and prediction of design metrics. System partitioning, modeling of hardware/software codesign. Synthesis from executable specifications. Prerequisites: ICS 252 and 233; or consent of instructor.

**258 Combinatorial Algorithms for Design Synthesis (4).** Basic graph partitioning algorithms. Combinatorial optimization techniques. Applications to layout, placement, routing, scheduling, allocation. Prerequisites: ICS 241, 252, 265.

**259 Seminar in Design Science (2).** Current research and research trends in design science. Forum for presentation and criticism by students of research work in progress. May be repeated for credit.

**261 Data Structures (4).** An in-depth treatment of data structures and their associated management algorithms including resource complexity analysis. Prerequisite: ICS 23 and 161.

**262 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, computational complexity, and NP-completeness. Prerequisite: ICS 162.

**263 Analysis of Algorithms (4).** Analysis of correctness and complexity of various efficient algorithms; discussion of problems for which no efficient solutions are known. Prerequisites: ICS 161 and 261.

**265 Graph Algorithms (4).** Graph definitions, representation methods, graph problems, algorithms, approximation methods, and applications. Prerequisites: ICS 161 and 261.

**266 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 261.

**269 Seminar in the Theory of Algorithms and Data Structures (2).** Current research and research trends in the theory of algorithms and data structures. May be repeated for credit.

**270A 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.

**270B 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 270A (may be taken concurrently) or consent of instructor.

**271A 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.

**273A 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 270A.

**275A Network-Based Reasoning / Constraint Networks (4).** Study of the theory and techniques of constraint network model. Covers techniques for solving constraint satisfaction problems: backtracking techniques, consistency algorithms, and structure-based techniques. Tractable subclasses. Extensions into applications such as temporal reasoning, diagnosis, and scheduling. Prerequisite: a basic course in algorithm design and analysis, or consent of instructor.

**275B Network-Based Reasoning / Belief Networks (4).** Focuses on reasoning with uncertainty using "Bayes Networks" that encode knowledge as probabilistic relations between variables, and the main task is, given some observations, to update the degree of belief in each proposition. Prerequisite: a basic course in probability or consent of instructor.

**276A Neural Networks (4).** Introduction to concepts of artificial neural networks (ANNs). Architectures of supervised and unsupervised networks. Basic math of learning and performance rules.

**276B Seminar in Models of the Brain (4).** Basic neural anatomy and physiology. Fundamental cell types and their channel properties. Organization of telencephalic circuitry. Cortico-Hippocampal pathways. Synaptic plasticity: long-term potentiation. Behavioral implications of plasticity, interpretation of lesion experiments, computational network models based on physiology of plasticity.

**276C Cognitive and Computational Neuroscience (4).** Computational analysis and simulation of physiological rules as sited in anatomical circuitries. Synaptic plasticity in the brain and its behavioral and psychological consequences in learning and memory. Theories of hippocampal function; thalamocortical function and interactions among neocortical layers.

**279 Seminar in Artificial Intelligence (2).** Current research and research trends in artificial intelligence. May be repeated for credit.

**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 (2 to 12)**

**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.

# INTERDISCIPLINARY STUDIES

UCI offers a variety of formally designated Interdisciplinary Programs (IDPs) which provide students with opportunities to pursue subject areas deriving from the interaction of different disciplines. These programs span the boundaries of traditional academic scholarship. Faculty participation is determined by research and teaching interests and, as such, faculty may be drawn from various departments and schools across the campus.

As described below, undergraduate minors are offered by the IDPs in African-American Studies, Asian American Studies, Chicano/Latino Studies, Global Peace and Conflict Studies, History and Philosophy of Science, and Latin American Studies. A graduate degree program is offered by the IDP in Transportation Science. The IDP in Women's Studies offers a major, a minor, and a graduate emphasis.

In addition, interdisciplinary minors in Global Sustainability, Native American Studies, and Religious Studies are available.

## Minor in African-American Studies

305 Humanities Trailer Complex; (714) 824-2376

Abdul JanMohamed, **Director**

### Participating Faculty

Lincoln W. Barrett, Ph.D. University of Pennsylvania, *Assistant Professor of English*

Rae Linda Brown, Ph.D. Yale University, *Associate Professor of Music*

Dickson D. Bruce, Jr., Ph.D. University of Pennsylvania, *Professor of History*

Thelma Foote, Ph.D. Harvard University, *Assistant Professor of History and African-American Studies*

Douglas M. Haynes, Ph.D. University of California, Berkeley, *Assistant Professor of History*

Anthony James, Ph.D. University of California, Irvine, *Associate Professor of Biological Sciences*

Abdul JanMohamed, Ph.D. Brandeis University, *Director of African-American Studies and Professor of English*

Bernard Johnson, A.A.S. Fashion Institute of Technology, *Assistant Professor of Dance*

Steven Mailloux, Ph.D. University of Southern California, *Associate Dean of Humanities, Graduate Study, and Professor of English*

Donald McKayle, *Professor of Dance*

James Newton, B.M. California State University, Los Angeles, *Professor of Music*

John Carlos Rowe, Ph.D. State University of New York, Buffalo, *Director of the UCI Critical Theory Institute and Professor of English*

Gabriele Schwab, Ph.D. University of Konstanz, *Professor of English and Comparative Literature*

Elaine Vaughn, Ph.D. Stanford University, *Associate Professor of Social Ecology*

Pat Ward Williams, M.F.A. Maryland Institute College of Art, *Associate Professor of Studio Art*

The minor in African-American Studies is an interdisciplinary program which offers undergraduate students an opportunity to study those societies and cultures established by the people of the African diaspora. The program's curriculum encourages students to investigate the African-American experience from a variety of disciplinary perspectives and theoretical approaches. Among the topics investigated in the course offerings are the process of colonization and the forced migration of African people, the positionality of African people in the racialized symbolic and social orders of the western hemisphere, the rhetoric produced by and about African people, and the cultural and aesthetic values associated with "blackness" and "Africanness." The minor is open to all UCI students. Course descriptions are available in the academic unit sections of the *Catalogue*.

### Requirements for the Minor

**Core course:** Completion of Humanities 51A, 51B, 51C (Introduction to African-American Studies I, II, III).

**Four relevant elective courses (16 units):** No more than two of these courses may be in the student's major department. Appropriate courses are to be selected by the student and must be approved by the African-American Studies Steering Committee. Students may select from:

**Education:** Education 124 (Perspectives on Multicultural Education).

**Fine Arts:** Dance 110 (Ethnic Dance), Music 78A, 78B (History of Jazz).

**Humanities:** English and Comparative Literature E8 (Major American Writers), CL9 (Introduction to Multicultural Topics in Literature), E105 (Multicultural Topics in English-Language Literature), CL105 (Multicultural Topics in Comparative Literature), E150 (Topics in Literature for Nonmajors); French 120 (Twentieth-Century French Literature: Proust), 125 (African Literature of French Expression); History 148A (Law and Minorities in the U.S.), 150 (Topics in African-American History), 180 (Special Studies in Social History: New World Slave Society; Civil War/Reconstruction), 190 (Colloquium: History of American Racism); Humanities 150 (Topics in African-American Studies).

**Social Sciences:** Anthropology 121D (Cross-Cultural Studies of Gender), 164A (African Societies), 164K (South Africa); Political Science 154A (The Politics of Sub-Saharan Africa), 154C (Comparative Politics: Four Nations, Three Continents); Psychology 174B (Social Psychology of African-American Families), 174E (Psychology of the Afro-American); Social Sciences 70A (Introduction to Minority Cultures in American Society), 70B (Introduction to Expressive Forms in American Society), 70C (Comparing Cultures), 70T (The History of Minorities in American Films), 170E (Society and Culture), 170F (History and Culture), 170H (Religion and Culture), 172B (Afro-American Culture), 176A (Afro-Latin American Music).

**Women's Studies:** Women's Studies 162 (Racism and Sexism), 163 (Women of Color), 180A (Cross-Cultural Studies of Gender; same as Anthropology 121D), 181A (Social Psychology of African-American Families; same as Psychology 174B).

Students may petition to the director to request that other relevant courses satisfy the minor requirements.

## Minor in Asian American Studies

481 Social Science Tower; (714) 824-2746

### Participating Faculty

Yong Chen, Ph.D. Cornell University, *Assistant Professor of History and Asian American Studies*

Dorothy Fujita-Rony, Ph.D. Yale University, *Assistant Professor of History and Asian American Studies*

Claire J. Kim, Ph.D. Yale University, *Acting Assistant Professor of Political Science*

Karen Leonard, Ph.D. University of Wisconsin, *Professor of Anthropology*

John M. Liu, Ph.D. University of California, Los Angeles, *Associate Professor of Social Sciences*

In addition to regular UCI faculty, lecturers who teach on a quarterly basis are an integral part of the Program. A current list of participants is available in the program office.

The minor in Asian American Studies is an interdisciplinary curriculum which examines the historical and contemporary experiences of Asians after their arrival in the United States. The minor seeks to provide an awareness of the history, culture (e.g., literary and creative art accomplishments), psychology, and social organization of Asian American communities. Students are invited to participate and partake in broadening their understanding of multicultural perspectives within U.S. society.

The minor is open to all UCI students. Course descriptions are available in the academic unit sections of the *Catalogue*.

### Requirements for the Minor

**Four core courses:** Social Sciences 78A, 78B, 78C (Introduction to Asian American Studies I, II, III; cross-listed with Humanities 60A-B-C; History 15C is crosslisted with Humanities 60A and Social Sciences 78A); Social Sciences 178A (Perspectives on Race and Ethnicity in the United States).

**Four upper-division elective courses selected from:** Anthropology 161T (Field Studies: Asian Immigrants and Refugees in Orange County); Education 124 (Perspectives on Multicultural Education); Environmental Analysis and Design E102 (Cultural Ecology and Environmental Design), E152U (Introduction to Urban Geography); History 152 (Asian American Labor History, Asian Americans and the American West, Chinese American Experience, Filipino American Experience); Political Science 29 (Asian American Politics), 126B (Urban Policy Analysis), 129 (Politics of Protest); Psychology 174A (Asian American Psychology); Social Ecology 100 (California's Population); Social Sciences 175B (Racial and Ethnic Communities), 178B (Asian American Women), 178C (Korean American Experience), 178D (Vietnamese American Experience), 178E (Japanese American Experience), 178F (South Asian American Experience); Sociology 59 (Asian American Families).

Students may petition to the director to request that other relevant courses satisfy the minor requirements.

## Minor in Chicano/Latino Studies

407 Social Science Tower; (714) 824-7180

Louis F. Mirón, **Director**

### Faculty

Richard Barrutia, Ph.D. University of Texas, *Professor Emeritus of Spanish*  
 Juan Bruce-Novoa, Ph.D. University of Colorado, *Chair of the Department of Spanish and Portuguese and Professor of Spanish*

Leo Chávez, Ph.D. Stanford University, *Chair of the Department of Anthropology and Professor of Anthropology*

John Dombink, Ph.D. University of California, Berkeley, *Associate Dean of Undergraduate Studies, School of Social Ecology, and Associate Professor of Social Ecology*

Raul Fernández, Ph.D. Claremont Graduate School, *Professor of Social Sciences*

L. Manuel García y Griego, Ph.D. University of California, Los Angeles, *Assistant Professor of Political Science*

Jeff Garcilazo, Ph.D. University of California, Santa Barbara, *Assistant Professor of Chicano/Latino Studies and History*

Robert Garfias, Ph.D. University of California, Los Angeles, *Professor of Anthropology*

Gilbert González, Ph.D. University of California, Los Angeles, *Professor of Social Sciences*

María Herrera-Sobek, Ph.D. University of California, Los Angeles, *Professor of Spanish*

Louis F. Mirón, Ph.D. Tulane University, *Director of Chicano/Latino Studies and Associate Professor of Education and Cognitive Sciences*

Alejandro Morales, Ph.D. Rutgers University, *Professor of Spanish*  
 Arthur Rubel, Ph.D. University of North Carolina, *Professor Emeritus of Family Medicine*

Jacobo Sefami, Ph.D. University of Texas at Austin, *Assistant Professor of Spanish and Portuguese*

Caesar D. Sereseres, Ph.D. University of California, Riverside, *Associate Dean for Undergraduate Studies, School of Social Sciences, and Associate Professor of Political Science*

Luis Villarreal, Ph.D. University of California, San Diego, *Professor of Biological Sciences*

The minor in Chicano/Latino Studies is an interdisciplinary curriculum designed to provide an awareness, knowledge, and appreciation of the language, history, culture, literature, sociology, anthropology, politics, social ecology, health, medicine, and creative (art, dance, drama, film, music) accomplishments in the Chicano/Latino communities. The minor is open to all UCI students. Course descriptions are available in the academic unit sections of the *Catalogue*.

### Requirements for the Minor

Three-quarter core course in Chicano/Latino Studies: Social Sciences 173 K-L-M (Comparative Latino Populations I-II-III). The first two quarters are lecture courses open to all students; the third quarter is a research seminar on Chicano/Latino topics which is open only to students in the minor and which receives upper-division writing credit.

Spanish 2A (Intermediate Spanish) or equivalent knowledge of Spanish. Students are encouraged, regardless of their major, to take as many Spanish language courses as their study plan allows.

One course in Chicano/Latino history or culture selected from: Spanish 110C (Chicano History), 142 (Chicano Culture); History 151A, 151B (Chicana/Chicano History), 198 (when topic is on Chicano history); Social Sciences 172D (Chicano Culture), 173F (Chicano History), 173H (History of Chicano Education), 176A (Afro-Latin American Music).

One course in Mexican history selected from: History 161A (Indian and Colonial Societies), 161B (Nineteenth Century), 161C (Twentieth Century), or one course in Mexican literature: Spanish 186 (Selected Topics in Latin American Literature, when topic is Mexican literature).

One course in Chicano/Latino literature selected from: Spanish 140A, 140B (Chicano Literature); English E 105 (when topic is Chicano/Latino literature); Comparative Literature CL9 (when topic is Chicano/Latino Literature), CL 105 (when topic is Chicano/Latino literature).

Two courses in topics related to Chicano/Latino Studies selected from: Anthropology 138Q (Latino Music: A View of Its Diversity and Strength); Education 124 (Perspectives on Multicultural Education); Environmental Analysis and Design E143U (Social Ecology of the Borderlands); Political Science 126A (Mexican-Americans and Politics), 126C (U.S. Immigration Policy), 129 (when topic is Chicano/Latino politics), 145B (U.S.-Mexico Relations); Social Sciences 172D (Chicano Culture), 173G (Film Media and the Latino Community), 173I (Perspectives on the U.S.-Mexican Border), 196 (Field Study in Multicultural Environment; Spanish 160 (Topics in Hispanic Film Studies); or other courses listed by the Chicano/Latino Studies program.

While students will be responsible for designing their minor according to the above requirements, the curriculum should be planned in consultation with Chicano/Latino Studies Program (CLSP) faculty. Curricula must receive approval from one faculty member in CLSP as well as the Director or designated representative. Students must also file an intent to pursue the minor with the CLSP office.

In addition to satisfying the requirements for the minor, students are encouraged to take advantage of the variety of unique educational opportunities available at UCI. Through the Education Abroad Program (EAP), students receive academic credit while studying at universities in Mexico, Chile, Costa Rica, Brazil, or Spain. Internship opportunities with private and public institutions concerned with the Chicano/Latino communities are available in Orange County, Sacramento, and Washington, D.C. Independent research with faculty on Chicano/Latino issues is also encouraged. Student research is conducted and given academic credit through independent study or group research courses offered in each academic unit.

The Summer University Research Fellowship (SURF), the Summer Academic Enrichment Program (SAEP), and the Pregraduate Mentorship Program (PGMP) are examples of programs at UCI which allow students to work as research assistants with professors.

## Minor in Global Peace and Conflict Studies

418 Social Science Tower; (714) 824-6410

Patrick Morgan, **Director**

### Faculty

Dennis Aigner, Ph.D. University of California, Berkeley, *Dean of the Graduate School of Management and Professor of Management*  
 Russell Dalton, Ph.D. University of Michigan, *Chair of the Department of Politics and Society and Professor of Political Science*  
 Joseph DiMento, Ph.D., J.D. University of Michigan, *Professor of Social Ecology and Management*  
 L. Manuel García y Griego, Ph.D. University of California, Los Angeles, *Assistant Professor of Politics and Society*  
 Michelle Garfinkel, Ph.D. Brown University, *Associate Professor of Economics*  
 Paula Garb, Ph.D., U.S.S.R. Academy of Sciences, *Lecturer in Social Sciences and Global Peace and Conflict Studies, and Associate Director of Global Peace and Conflict Studies*  
 John Graham, Ph.D. University of California, Berkeley, *Professor of Management*  
 Lawrence A. Howard, Ph.D. University of California, Irvine, *Lecturer in Social Sciences*  
 Karl Hufbauer, Ph.D. University of California, Berkeley, *Professor of History*  
 Helen Ingram, Ph.D. Columbia University, *Professor of Social Ecology and of Politics and Society, and Drew, Chace, and Erin Warmington Chair in the Social Ecology of Peace and International Cooperation*  
 Jon Jacobson, Ph.D. University of California, Berkeley, *Professor of History*  
 Jon Lawrence, Ph.D. University of Rochester, *Chair of the Department of Physics and Professor of Physics*  
 Sung-Chull Lee, Ph.D. University of Kansas, *Assistant Professor of Political Science*  
 Herbert Lehnert, Ph.D. University of Kiel, *Research Professor of German*  
 Guy de Mallac, Ph.D. Cornell University, *Professor Emeritus of Russian*  
 Lynn Mally, Ph.D. University of California, Berkeley, *Associate Professor of History*  
 Julius Margolis, Ph.D. Harvard University, *Professor Emeritus of Economics*  
 Richard McCleary, Ph.D. Northwestern University, *Professor of Social Ecology*  
 Martin C. McGuire, Ph.D. Harvard University, *Professor of Economics and Management and Heinz Family Chair in the Economics and Public Policy of Peace*  
 Calvin McLaughlin, Ph.D. Massachusetts Institute of Technology, *Professor of Biological Chemistry, Biological Sciences, Ophthalmology, and Community and Environmental Medicine*  
 Seymour Menton, Ph.D. New York University, *Research Professor of Spanish and Portuguese*  
 Patrick Morgan, Ph.D. Yale University, *Director of Global Peace and Conflict Studies, Professor of Political Science, and Thomas T. and Elizabeth Tierney Chair in Peace Studies*  
 Keith Nelson, Ph.D. University of California, Berkeley, *Professor of History*  
 Riley Newman, Ph.D. University of California, Berkeley, *Professor of Physics*  
 Margot Norris, Ph.D. State University of New York, Buffalo, *Professor of English and Comparative Literature*  
 Frederick Reines, Ph.D. New York University, *UCI Distinguished Professor Emeritus of Physics*  
 Shawn Rosenberg, M. Litt. University of Oxford, *Associate Professor of Political Science and Social Psychology*  
 F. Sherwood Rowland, Ph.D. University of Chicago, *Research Professor of Chemistry and Earth System Science, and Bren Chair*  
 Wayne Sandholtz, Ph.D. University of California, Berkeley, *Associate Professor of Political Science*  
 Roland Schinzinger, Ph.D. University of California, Berkeley, *Professor Emeritus of Electrical and Computer Engineering*  
 Gabriele Schwab, Ph.D. University of Konstanz, *Professor of English and Comparative Literature*  
 Caesar Sereseres, Ph.D. University of California, Riverside, *Associate Dean for Undergraduate Studies, School of Social Sciences, and Associate Professor of Political Science*

David A. Smith, Ph.D. University of North Carolina, Chapel Hill, *Associate Professor of Sociology and Social Ecology*  
 Etel Solingen, Ph.D. University of California, Los Angeles, *Associate Professor of Political Science*  
 Alec Stone, Ph.D. University of Washington, *Associate Professor of Political Science*  
 Rein Taagepera, Ph.D. University of Delaware, *Professor Emeritus of Political Science*  
 John M. Whiteley, Ed.D. Harvard University, *Acting Chair of the Department of Environmental Analysis and Design and Professor of Social Ecology*  
 Murray Wolfson, Ph.D. University of Wisconsin, *Adjunct Professor of Economics*

The minor in Global Peace and Conflict Studies is an interdisciplinary curriculum which addresses the problem of international violence; the threat of global war; and paths to world-wide cooperation in building a secure, prosperous, and democratic future. The minor is available through the School of Humanities, the School of 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.

Course descriptions are available in the academic unit sections of the *Catalogue*.

### Requirements for the Minor

**Three courses:** History 11 (Introduction to Peace and Conflict), Political Science 41A (Introduction to International Relations), and either Environmental Analysis and Design E117 (Nuclear Environments), Political Science 42A (Nuclear Arms and Global Conflicts), or Physics 16 (Physics of Global Issues).

**Four relevant upper-division courses:** These are examples of courses offered: Anthropology 139 (Conflict Management in Cross-Cultural Perspective); Economics 148 (Political Economy of National Defense); 161C (International Trade and Commercial Policy); English and Comparative Literature CL104 (Modern War in Literature and Art), E 105 (Imaging War and Peace); Environmental Analysis and Design E113, E114 (Social Ecology of Peace I, II); History 126A, B, C (European International History), 158A (The Rise and Fall of U.S. Power), 195 (Arms Control Simulation); Philosophy 132 (Political and Social Philosophy); Political Science 142D, E, F (U.S. Foreign Policy); 143C (Arms Control and International Security), 143D (Global Security and Cooperation), 149A (Ethnic and Religious Conflict), 149B (Global Environmental Politics), 152D-E (Post-Soviet Politics); Social Science 184D (Global Peace and Conflict Studies: Current Topics); 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 185A-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, four, and four units of credit.

### The GPACS Theme House Discussions

Students are encouraged to participate in the weekly discussions and other events on international peace and conflict held at the GPACS Theme House. Student enroll in the Theme House course (Social Sciences 184D) for two units of credit per quarter.

## Minor in the History and Philosophy of Science

220 Humanities Office Building II; (714) 824-6565  
Brian Skyrms, **Director**

### Participating 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*

Jeffrey A. Barrett, Ph.D. Columbia University, *Assistant Professor of Philosophy*

William H. Batchelder, Ph.D. Stanford University, *Professor of Cognitive Sciences*

Bruce M. Bennett, Ph.D. Columbia University, *Professor of Mathematics*

Paul C. Eklof, Ph.D. Cornell University, *Professor of Mathematics*

Matthew D. Foreman, Ph.D. University of California, Berkeley, *Professor of Mathematics and Philosophy*

Douglas M. Haynes, Ph.D. University of California, Berkeley, *Assistant Professor of History*

Donald Hoffman, Ph.D. Massachusetts Institute of Technology, *Professor of Psychology and Information and Computer Science*

Karl G. Hufbauer, Ph.D. University of California, Berkeley, *Professor of History*

Mary-Louise Kean, Ph.D. Massachusetts Institute of Technology, *Professor of Linguistics and Cognitive Sciences*

John Leslie King, Ph.D. University of California, Irvine, *Professor of Information and Computer Science and Management*

Rob Kling, Ph.D. Stanford University, *Professor of Information and Computer Science and Management*

Stuart M. Krassner, Sc.D. The Johns Hopkins University, *Professor of Biological Sciences*

J. Karel Lambert, Ph.D. Michigan State University, *Professor Emeritus of Philosophy*

Howard M. Lenhoff, Ph.D. The Johns Hopkins University, *Professor Emeritus of Biological Sciences*

R. Duncan Luce, Ph.D. Massachusetts Institute of Technology, *Director of the Institute for Mathematical Behavioral Sciences and UCI Distinguished Professor Emeritus of Psychology*

Frederic C. Ludwig, M.D. Tübingen (Germany), D.Sc. Sorbonne (France), *Professor Emeritus of Pathology*

Penelope Maddy, Ph.D. Princeton University, *Professor of Philosophy and Mathematics*

Robert May, Ph.D. Massachusetts Institute of Technology, *Professor of Linguistics*

Louis Narens, Ph.D. University of California, Los Angeles, *Professor of Cognitive Sciences*

Alan Nelson, Ph.D. University of Illinois at Chicago, *Associate Professor of Philosophy*

Riley Newman, Ph.D. University of California, Berkeley, *Professor of Physics*

Robert Newson, Ph.D. Columbia University, *Professor of English*

Terence D. Parsons, Ph.D. Stanford University, *Professor of Philosophy*

A. Kimball Romney, Ph.D. Harvard University, *Professor Emeritus of Anthropology*

Michael R. Rose, Ph.D. University of Sussex, *Professor of Biological Sciences*

Jonas Schultz, Ph.D. Columbia University, *Professor of Physics*

Brian Skyrms, Ph.D. University of Pittsburgh, *Director of the Emphasis and Minor in the History and Philosophy of Science and Professor of Philosophy*

Norman M. Weinberger, Ph.D. Case Western Reserve University, *Professor of Biological Sciences*

Peter Woodruff, Ph.D. University of Pittsburgh, *Associate Professor of Philosophy*

The minor in the History and Philosophy of Science is intended for students who wish to study the history of science, the philosophical foundations of scientific inquiry, and the relationship between

science and other fields. The history of science explores how science is actually done and how it has influenced history. This may involve tracking down an idea's source or its influences, evaluating the cultural forces at work in the generation of a scientific theory or the reaction of culture to science, or taking a detailed look at the work of a particular scientist or movement within science.

The philosophy of science is concerned with determining what science and mathematics are, accounting for their apparent successes, and resolving problems of philosophical interest that arise in the sciences. Philosophy of science courses cover such topics as the role of logic and language in science and in mathematics, scientific explanation, evidence, and probability. These courses may also cover work that has been done on the philosophical problems in specific sciences—for example, the direction of time in physics, the model of mind in psychology, the structure of evolution theory in biology, and the implications of Gödel's incompleteness theorems for mathematics.

The minor is available to all UCI students. Course descriptions may be found in the academic unit sections of the *Catalogue*.

### Requirements for the Minor

Completion of History 60 (Introduction to the History of Science) and Philosophy 40 (Introduction to the Philosophy of Science).

Two courses selected from: Anthropology 171H-I (History of Science I, II); History 135A-F (Studies in the History of Science and Medicine); Political Science 136B (History of Political Economy); Psychology 129H (History of Psychology).

Two courses selected from: Biological Sciences 165 (Theoretical Psychobiology); Linguistics 141 (Philosophy of Language), 143 (Semantics), 152 (Linguistic Theories as Psychological Theories); Philosophy 106 (Topics in Mathematical Logic), 107 (Topics in Philosophical Logic), 108 (Topics in Inductive Logic), 140 (Topics in Philosophy of Science), 141 (Topics in Philosophy of Physics), 142 (Topics in Philosophy of Biology), 143 (Topics in Philosophy of Psychology), 144 (Topics in Philosophy of Social Science), 145 (Topics in Philosophy of Language), 146 (Topics in Philosophy of Logic), 147 (Topics in Philosophy of Mathematics), 148 (Philosophical Foundations of Probability).

Senior Seminar: Completion of Philosophy 149 (Senior Seminar in History and Philosophy of Science).

## Minor in Latin American Studies

322 Humanities Office Building; (714) 824-7091  
Jacobo Sefamí, **Director**

### Faculty

Richard Barrutia, Ph.D. University of Texas, *Professor Emeritus of Spanish*  
Juan Bruce-Novoa, Ph.D. University of Colorado, *Chair of the Department of Spanish and Portuguese and Professor of Spanish*

Frank Cancian, Ph.D. Harvard University, *Professor of Anthropology*

Leo Chávez, Ph.D. Stanford University, *Chair of the Department of Anthropology and Professor of Anthropology*

Anne Cruz, Ph.D. Stanford University, *Associate Professor of Spanish*

Raul Fernandez, Ph.D. Claremont Graduate School, *Professor of Social Sciences*

Ana Paula Ferreira, Ph.D. New York University, *Associate Professor of Portuguese*

L. Manuel García y Griego, Ph.D. University of California, Los Angeles, *Assistant Professor of Political Science*

Lucía Guerra-Cunningham, Ph.D. University of Kansas, *Professor of Spanish*

María Herrera-Sobek, Ph.D. University of California, Los Angeles, *Professor of Spanish*

Lillian Manzor-Coats, Ph.D. University of Southern California, *Associate Professor of Comparative Literature*

Seymour Menton, Ph.D. New York University, *Research Professor of Spanish and Portuguese*

Alejandro Morales, Ph.D. Rutgers University, *Professor of Spanish*



J. Dennis Mull, M.D. Medical College of Virginia, *Professor Emeritus of Family Medicine*  
 Jaime Rodriguez, Ph.D. University of Texas, *Professor of History*  
 Arthur Rubel, Ph.D. University of North Carolina, *Professor Emeritus of Family Medicine*  
 Armin Schwegler, Ph.D. University of California, Berkeley, *Professor of Spanish*  
 Jacobo Sefamí, Ph.D. University of Texas, *Director of Latin American Studies and Assistant Professor of Spanish*  
 Caesar D. Sereseres, Ph.D. University of California, Riverside, *Associate Dean for Undergraduate Studies, School of Social Sciences, and Associate Professor of Political Science*  
 Etel Solingen, Ph.D. University of California, Los Angeles, *Associate Professor of Political Science*  
 Luis Suárez-Villa, Ph.D. Cornell University, *Professor of Social Ecology*  
 Heidi Tinsman, Ph.D. Yale University, *Assistant Professor of History*  
 Steven Topik, Ph.D. University of Texas, *Department Chair of History and Professor of History*  
 Roberto Villaverde, Ph.D. University of Illinois, Urbana, *Associate Professor of Civil Engineering*  
 Juan Villegas, Ph.D. Universidad de Chile, *Research Professor of Spanish*  
 Howard Waitzkin, M.D., Ph.D. Harvard University, *Professor of Medicine, Social Sciences, and Social Ecology*  
 Douglas R. White, Ph.D. University of Minnesota, *Professor of Anthropology*

The minor in Latin American Studies is an interdisciplinary curriculum designed to provide for an awareness, knowledge, and appreciation of Latin American issues in the areas of language, history, culture, literary studies, sociology, anthropology, political science, social ecology, health, folk medicine, and creative (art, dance, drama, music) accomplishments. The minor is open to all UCI students. Course descriptions are available in the academic unit sections of the *Catalogue*.

### Requirements for the Minor

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: Comparative Literature CL 103 (when topic is on Latin American literature and history); Spanish 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: Twentieth Century), 162 (Brazil), 166 (United States-Latin American Relations), 169 (Topics in Latin American History), 190 (Colloquium, when topic is on Latin America).

One course in Latin American social sciences selected from: Anthropology 125A (Economic Anthropology), 125X (Immigration in Comparative Perspective), 162A (Peoples and Cultures of Latin America); Political Science 145A (Central America and U.S. Policy), 153A (Latin American Politics); Social Sciences 172F (Latin American Culture I).

One course in Chicano studies selected from: Environmental Analysis and Design E143U (Social Ecology of the Borderlands); Political Science 126A (Mexican-Americans and Politics); Social

Sciences 172D (Chicano Culture); Spanish 110C (Chicano History), 140A, B (Chicano Literature), 142 (Chicano Culture), 186 (when topic is on Chicano literature); Social Sciences 172D (Chicano Culture).

Three courses in Latin American studies selected from: any of the courses listed above in the literature, history, and social sciences requirements; Humanities 30 (Latin America and the Caribbean); Spanish 110A (when the topic is on Latin America), 110B (Latin American Civilization); 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.

With the approval of the director, other relevant courses also may satisfy the requirements for the minor.

**Residence Requirement for the Minor:** Four upper-division courses must be successfully completed at UCI.

## Graduate Program in Transportation Science

Social Sciences II; (714) 824-6502; Fax (714) 824-2182  
 Charles Lave, **Director**

### Faculty

Marlon G. Boarnet, Ph.D. Princeton University, *Assistant Professor of Social Ecology*  
 David Brownstone, Ph.D. University of California, Berkeley, *Associate Professor of Economics and Social Ecology*  
 Gordon J. Fielding, Ph.D. University of California, Los Angeles, *Professor Emeritus of Social Sciences*  
 Frank A. Haight, Ph.D. University of New Zealand, *Adjunct Professor of Economics*  
 R. Jayakrishnan, Ph.D. University of Texas at Austin, *Assistant Professor of Civil Engineering*  
 Charles Lave, Ph.D. Stanford University, *Faculty Assistant to the Chancellor, Director of Transportation Science, and Professor of Economics*  
 Michael McNally, Ph.D. University of California, Irvine, *Associate Professor of Civil and Environmental Engineering*  
 Raymond W. Novaco, Ph.D. Indiana University, *Professor of Social Ecology*  
 Wilfred W. Recker, Ph.D. Carnegie-Mellon University, *Professor of Civil Engineering and Director of the Institute of Transportation Studies*  
 Stephen G. Ritchie, Ph.D. Cornell University, *Professor and Department Chair of Civil and Environmental Engineering*  
 Kenneth A. Small, Ph.D. University of California, Berkeley, *Professor of Economics*  
 Luis Suarez-Villa, Ph.D. Cornell University, *Professor of Social Ecology*

### Affiliated Faculty

Randall D. Crane, Ph.D. Massachusetts Institute of Technology, *Assistant Professor of Social Ecology*  
 Arthur S. DeVany, Ph.D. University of California, Los Angeles, *Professor of Economics*  
 Joseph F. DiMento, Ph.D., J.D. University of Michigan, *Professor of Social Ecology and of Management*  
 Amihai Glazer, Ph.D. Yale University, *Professor of Economics*  
 Daniel Klein, Ph.D. New York University, *Assistant Professor of Economics*  
 Julius Margolis, Ph.D. Harvard University, *Professor Emeritus of Economics*  
 Newton Margulies, Ph.D. University of California, Los Angeles, *Professor Emeritus of Management*  
 Carole J. Uhlaner, Ph.D. Harvard University, *Associate Professor of Political Science*  
 Christian Werner, Ph.D. The Free University of Berlin, *Professor Emeritus of Economics*

The graduate program in Transportation Science is administered by faculty from three academic units: the Department of Civil and Environmental Engineering, the Department of Economics, and the School of Social Ecology. The program is designed to educate students in a broad set of competencies and perspectives that mirror the actual practice of current transportation research. It leads to the M.S. and Ph.D. degrees in Transportation Science.

### Admission

Admission is limited to a small number of exceptionally talented, independent, and self-disciplined students. The deadline for application for admission is January 15 for fall quarter. Students are admitted for winter or spring quarters only under exceptional circumstances. Late applications are considered on a space-available basis. All applicants must take the Graduate Record Exam (GRE) prior to the application deadline. Foreign applicants must also submit Test of English as a Foreign Language (TOEFL) scores.

### Requirements

All students must complete a core curriculum consisting of eight courses from Civil Engineering, Economics, and Social Ecology plus the graduate colloquium. Students may apply to the Director of Graduate Studies for exemption from specific courses based upon the evidence of prior course work. Students also must successfully complete at least six courses from among the four specialization areas: (1) Methods and Analysis, (2) Transportation Economics, (3) Traffic Analysis, and (4) Planning and Policy Analysis. At least four of these six courses must be from one specialization.

Other requirements include: a replication project, in which students replicate the empirical work of a published paper from a major transportation journal; the qualifying examination, which consists of the oral defense of the student's dissertation proposal; and completion of the dissertation.

### Research Facilities

UCI is a major research university and has an excellent library with a collection of more than 1.5 million volumes, as well as special interlibrary loan arrangements with other University of California libraries including the Transportation Library at Berkeley. Research is coordinated with the Irvine branch of the Institute of Transportation Studies (ITS). About 25 to 30 graduate students are employed as research assistants each year in ITS.

Research covers a broad spectrum of transportation issues. Current funded research projects focus upon: intelligent vehicle highway systems (IVHS), particularly advanced transportation management systems; planning and analysis of transportation systems; transportation systems operation and control; artificial intelligence applications; transportation engineering; transportation safety; road and congestion pricing; environmental and energy issues and demand for alternative fuel vehicles; public transit operations, transportation-land use interactions, demand for autos, and travel demand.

ITS is part of the University of California Transportation Center, one of ten federally designated centers of excellence for transportation research. The transportation research program at UCI is also supported by the Advanced Transportation Management Systems (ATMS) Laboratories.

The Institute maintains a regular publications series documenting research conducted within its programs and is the editorial headquarters of four international journals: *Transportation Research*, parts A, B, and C, and *Accident Analysis and Prevention*.

## Women's Studies

201B Humanities Trailer Complex; (714) 824-4234  
Elizabeth Guthrie, **Director**

### Core Faculty

- Lindon Barrett, Ph.D. University of Pennsylvania, *Assistant Professor of English* (critical theory, African-American cultural studies)
- Rhona Berenstein, Ph.D. University of California, Los Angeles, *Assistant Professor of Film Studies* (film genres, feminist-film theory, gay and lesbian cinema, history of television)
- Victoria Bernal, Ph.D. Northwestern University, *Associate Professor of Anthropology* (political economy, development, religion, gender, peasants, African, Muslim societies)
- Kitty C. Calavita, Ph.D. University of Delaware, *Associate Professor of Social Ecology* (white-collar crime, gender and race relations, immigration policy)
- Chungmoo Choi, Ph.D. Indiana University, *Associate Professor of Korean Culture* (modern Korea, post-colonial and colonial discourse, popular culture, anthropology)
- Cornelia Dayton, Ph.D. Princeton University, *Associate Professor of History* (gender relations in North America to 1820, gender and litigation patterns; women, madness, and dependency)
- Thelma Foote, Ph.D. Harvard University, *Assistant Professor of History and African-American Studies* (American history and race relations)
- Elizabeth Guthrie, Ph.D. University of Illinois, *Director of the Program in Women's Studies, Director of the French Language Program, and Lecturer in French* (women, learning, and education; women and language, language teaching, discourse, communication)
- Laura H. Y. Kang, Ph.D. University of California, Santa Cruz, *Assistant Professor of Comparative Literature and Women's Studies* (Asian American literature and culture, feminist theory, ethnic studies, gender)
- Karen Leonard, Ph.D. University of Wisconsin, *Professor of Anthropology* (social history of India, comparative history of women and the family, Asian-American social history)
- Catherine Lord, M.F.A. State University of New York, Buffalo (Visual Studies Workshop), *Professor of Studio Art* (critical theory, feminism, photography, gay and lesbian studies)
- Liisa Malkki, Ph.D. Harvard University, *Assistant Professor of Anthropology* (historical anthropology, nations and nationalism, refugees and exile, ethnicity and transnational identity, East and Central Africa)
- Lillian Manzor-Coats, Ph.D. University of Southern California, *Associate Professor of Comparative Literature* (Latino/Latina literature, cultural studies)
- Robert G. Moeller, Ph.D. University of California, Berkeley, *Professor of History* (European women, women in modern Germany)
- Nancy Naples, Ph.D. City University of New York, *Assistant Professor of Sociology* (women's political consciousness and activism, feminist theories of the state, women and poverty, sexual violence against women, rural economic development)
- Jane O. Newman, Ph.D. Princeton University, *Associate Professor of Comparative Literature* (sixteenth- and seventeenth-century English, French, German, Italian, and neo-Latin literature; feminist theory, new historicism and cultural materialism, genre theory, drama, epic, pastoral, early modern women's history)
- Leslie W. Rabine, Ph.D. Stanford University, *Professor of French* (nineteenth-century French literature, francophone literature, women's studies, and fashion studies)
- Connie Samaras, M.F.A. Eastern Michigan University, *Associate Professor of Studio Art* (photography, media theory, contemporary art issues)
- Gabriele Schwab, Ph.D. University of Konstanz, *Professor of English and Comparative Literature* (twentieth-century literature, critical theory, comparative literature)
- Patrick Sinclair, Ph.D. Northwestern University, *Associate Professor of Classics* (Roman social history, Latin prose, lexicology)
- John H. Smith, Ph.D. Princeton University, *Associate Professor of German* (eighteenth- and nineteenth-century German literature and intellectual history, literary theory, lesbian and gay studies)
- Sally Stein, Ph.D. Yale University, *Associate Professor of Art History* (history of photography and mass media)
- Linda Williams, Ph.D. University of Colorado, *Director of the Program in Film Studies and Professor of Film Studies* (film history, theory and genre, women and film, feminist theory, mass culture)

**Affiliated Faculty**

- Harold Baker, Ph.D. Brown University, *Assistant Professor of Russian*  
 Marjorie A. Beale, Ph.D. University of California, Berkeley, *Assistant Professor of History*  
 Rae Linda Brown, Ph.D. Yale University, *Associate Professor of Music*  
 Francesca M. Cancian, Ph.D. Harvard University, *Department Chair of Sociology and Professor of Sociology*  
 Kenneth S. Chew, Ph.D. University of California, Berkeley, *Associate Professor of Social Ecology*  
 Michael P. Clark, Ph.D. University of California, Irvine, *Dean of the School of Humanities (Acting) and Professor of English*  
 K. Alison Clarke-Stewart, Ph.D. Yale University, *Professor of Social Ecology*  
 Anne J. Cruz, Ph.D. Stanford University, *Associate Professor of Spanish*  
 Ana Paula Ferreira, Ph.D. New York University, *Associate Professor of Portuguese*  
 Anne Friedberg, Ph.D. New York University, *Associate Professor of Film Studies*  
 Suzanne Gearhart, Ph.D. The John Hopkins University, *Professor of French*  
 Wendy A. Goldberg, Ph.D. University of Michigan, *Associate Professor of Social Ecology*  
 Lucía Guerra-Cunningham, Ph.D. University of Kansas, *Professor of Spanish*  
 Gail Hart, Ph.D. University of Virginia, *Associate Dean of Humanities for Undergraduate Study and Associate Professor of German*  
 María Herrera-Sobek, Ph.D. University of California, Los Angeles, *Professor of Spanish*  
 Renée Riese Hubert, Ph.D. Columbia University, *Professor Emerita of French and Comparative Literature*  
 Sandra S. Irani, Ph.D. University of California, Berkeley, *Assistant Professor of Information and Computer Science*  
 Susan B. Klein, Ph.D. Cornell University, *Assistant Professor of Japanese*  
 Meredith Lee, Ph.D. Yale University, *Department Chair and Professor of German*  
 Julia Reinhard Lupton, Ph.D. Yale University, *Director of the Comparative Literature Program and Associate Professor of Comparative Literature*  
 Penelope Maddy, Ph.D. Princeton University, *Professor of Philosophy and Mathematics*  
 Juliet Flower MacCannell, Ph.D. Cornell University, *Professor Emerita of Comparative Literature*  
 Alejandro Morales, Ph.D. Rutgers University, *Professor of Spanish*  
 Robert Newsom, Ph.D. Columbia University, *Professor of English*  
 Margot Norris, Ph.D. State University of New York, Buffalo, *Professor of English and Comparative Literature*  
 Patricia A. O'Brien, Ph.D. Columbia University, *Director of the UC Humanities Research Institute and Professor of History*  
 Julian Palley, Ph.D. University of New Mexico, *Professor Emeritus of Spanish*  
 Mark S. Poster, Ph.D. New York University, *Professor of History and of Information and Computer Science*  
 Judy B. Rosener, Ph.D. Claremont Graduate School, *Senior Lecturer in Management and Social Ecology*  
 John Carlos Rowe, Ph.D. State University of New York, Buffalo, *Director of the Critical Theory Institute and Professor of English*  
 Nancy Lee Ruyter, Ph.D. Claremont Graduate School, *Associate Professor of Dance*  
 Sujata Tewari, Ph.D. McGill University, *Associate Professor of Psychiatry and Human Behavior and Biological Sciences*  
 William C. Thompson, Ph.D. Stanford University, J.D. University of California, Berkeley, *Professor of Social Ecology*  
 Judith Treas, Ph.D. University of California, Los Angeles, *Professor of Sociology*  
 Carole J. Uhlaner, Ph.D. Harvard University, *Associate Professor of Political Science*  
 Alladi Venkatesh, Ph.D. Syracuse University, *Associate Professor of Management*  
 Ann Walthall, Ph.D. University of Chicago, *Professor of History*  
 Gary Watson, Ph.D. Princeton University, *Associate Professor of Philosophy*  
 Carol K. Whalen, Ph.D. University of California, Los Angeles, *Department Chair of Psychology and Social Behavior and Professor of Social Ecology and Psychiatry and Human Behavior*

Women's Studies, like feminism, is a way of asking questions rather than a particular set of answers or conclusions. How does being female affect one's participation in family, literature, history, art, politics, economy, and education? How do language, visual representations, beliefs, and values shape women's and men's status

in society and culture? How does the experience of women differ by race, class, nationality, religion, and sexual preference? The new knowledge and perspectives provoked by such questions have established Women's Studies as a dynamic and compelling field of study and have spurred the restructuring of curriculum and knowledge across the other disciplines.

The field of women's studies has developed at a phenomenal rate from a handful of student-initiated courses in the early 1970s to more than 500 programs in colleges and universities across the United States offering degrees at the B.A., M.A., and Ph.D. levels. The Program in Women's Studies at UCI was founded in 1975 and has grown significantly since that time. The program offers a major leading to the B.A. degree in Women's Studies, an undergraduate minor, and a graduate emphasis in Feminist Studies.

The undergraduate program in Women's Studies draws upon faculty with expertise in humanities, social sciences, and the arts. Through diverse course offerings, the program examines the contributions of women from different backgrounds to culture and society and to explore women's and men's lives in the context of changing gender relations. The program emphasizes interdisciplinary, multicultural scholarship and includes course work in feminist theories, the cultural roles of women, women's socioeconomic condition, women's history, women's literature in a cross-cultural frame, women's images in fine arts and film, women of color, and lesbian and gay studies.

Women's Studies provides a unique intellectual community where faculty and students share a commitment to interactive teaching and learning. Students work closely with faculty and the program's academic coordinator to plan a coherent program of study and to anticipate work toward advanced degrees and a wide variety of career options.

**CAREER OPPORTUNITIES**

A degree in Women's Studies prepares students for the expanding opportunities available in graduate programs and in numerous careers in both the public and private sectors. As more women work, business and corporations find the need for increased knowledge about women, and the growth of women's organizations and agencies—at the local, national, and global levels—is creating new opportunities for graduates with specializations in Women's Studies. Graduates bring unique skills and knowledge to the professions of law, medicine, social work, teaching, counseling, and to government service, all of which increasingly require expertise on issues concerning women and gender. A background in Women's Studies develops critical and analytical skills which prove valuable in the full range of life choices.

The Career and Life Planning 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. In addition, the Women's Studies Office provides more specialized career counseling and information on graduate programs in Women's Studies and related fields.

**REQUIREMENTS FOR THE BACHELOR'S DEGREE IN WOMEN'S STUDIES**

**University Requirements:** See pages 57–61.

**Program Requirements for the Major**

Completion of 14 Women's Studies courses as specified below.

- A. Three introductory core courses (Women's Studies 50A, 50B, 50C).
- B. Three advanced core courses (Women's Studies 139, 160, 197).
- C. One course selected from Women's Studies 161, 162, or 163.

- D. At least one course selected from each of the following (total of four courses): Women's Studies 170, 171, 174, and 180–186.
- E. Two additional courses selected from Women's Studies 150, 170, 171, 173, 174, 180, 181, 182, 183, 184, 185, 186, 187.
- F. Two years of a language other than English or equivalent competence (two quarters beyond the breadth requirement).

**Residence Requirement for the Major:** A minimum of five upper-division courses required for the major must be completed successfully at UCI. Courses taken through the UC Education Abroad Program will be counted toward the residence requirement by student petition and upon approval of course content by the Women's Studies Curriculum Committee.

#### **Program Requirements for the Minor**

Completion of seven courses including three core courses (Women's Studies 50A, 50B, 50C) and four courses selected from Women's Studies 139, 150, 155, 160, 161, 162, 163, 170, 171, 173, 174, 180, 181, 182, 183, 184, 185, 186, 187.

**Residence Requirement for the Minor:** A minimum of four upper-division courses required for the minor must be completed successfully at UCI.

#### **GRADUATE EMPHASIS IN FEMINIST STUDIES**

The Program in Women's Studies offers an emphasis in Feminist Studies, which is available in conjunction with the Ph.D. programs in the Departments of Anthropology, Art History, East Asian Languages and Literatures, English and Comparative Literature, French and Italian, German, History, Sociology, and Spanish and Portuguese; with the Ph.D. concentration in Social Relations; and with the M.F.A. programs in the Departments of Drama and Studio Art. Satisfactory completion of the emphasis is certified by the Director of Women's Studies and is noted in the student's dossier.

#### **Admission to the Program**

Applicants must first be admitted to, or currently enrolled in, one of the participating programs noted above. Applicants must submit to the Women's Studies Graduate Program Committee: (1) an application form listing prior undergraduate and graduate course work related to Feminist Studies, institutions attended, and majors(s); (2) a one- to two-page statement of purpose, including career objectives, areas of interest and research, record of research, teaching, community and/or creative work; and (3) a sample of written work related to Feminist Studies.

The Committee determines admissions, in consultation with the Women's Studies Core Faculty, based upon the extent to which the applicant's research interests relate to Feminist Studies, the applicant's previous course work, and research or other experience related to Feminist or Women's Studies. Lack of prior course work does not preclude admission, so long as a compelling statement of research interests congruent with the graduate emphasis makes the case.

#### **Emphasis Requirements**

Minimum course work for the graduate emphasis in Feminist Studies consists of four courses: two core courses, Women's Studies 200A-B, a coherent sequence normally taken in consecutive quarters; and any two courses selected from the list of courses in Feminist Studies approved by the Committee, as long as one of these is a graduate course in the student's own department or area of interest. In keeping with the interdisciplinary focus of this emphasis, it is highly recommended that the other be a course from a discipline outside that department or area. The course requirements for Ph.D. and M.F.A. candidates are the same.

For doctoral students, the qualifying examination and dissertation topic should incorporate gender as a central category of analysis. One member of the candidate's qualifying examination committee

and of the candidate's dissertation committee is normally a member of the Women's Studies Core Faculty. There are no requirements concerning qualifying examinations or theses for M.F.A. students.

### **Courses in Women's Studies**

#### **LOWER-DIVISION**

**50A Introduction to Women's Studies: Feminist Perspectives on Culture and Society (4) F.** Cross-disciplinary multicultural introduction to Women's Studies; recent feminist scholarship and creative work in history, literature, and social sciences; contemporary issues in culture and society; diversity of women's experiences across lines of class, race, ethnicity, and sexual preference; exploring multiple feminisms. (IV, VII-A)

**50B Social Perspectives on Gender (4) W.** Surveys recent social research on gender differences, gender stratification, and the gendered nature of language, belief systems, politics, occupations, and family life. Analyzes the interaction of gender with race, ethnicity, and social class, and compares theories of gender stratification. (IV, VII-A)

**50C Humanistic Perspectives on Gender (4) S.** Designed to introduce students to the fundamental concept of gender as it impacts disciplines in the humanities and to sensitize them to cultural assumptions about what constitutes history, "great" art and literature, and philosophy. (IV, VII-A)

**51 Issues in Contemporary Feminism in the United States (4).** Introduction to issues related to women and gender in contemporary life in the United States. Explores a variety of topics addressed by feminist scholarship from empirical, theoretical, and analytical perspectives. (VII-A)

#### **UPPER-DIVISION**

**139 Feminist Theory (4).** The treatment of women or women's issues in major schools of thought and/or social and political movements including advocates of women's rights and protagonists in current debates. Students write several essays of varying lengths totaling at least 4,000 words. Prerequisites: Women's Studies 50A, 50B, 50C; Women's Studies majors and minors only; consent of instructor; satisfaction of lower-division writing requirement; upper-division standing. May be repeated for credit as topics vary.

**150 Feminist Cultural Studies (4).** Investigation of the theories and methods that inform the feminist study of culture. Focuses on the interpretation of the visual arts and literature created by, and predominantly for, women. Prerequisite: Women's Studies 50A, 50B, or 50C. May be repeated for credit as topics vary. (VII-A)

**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 as topics vary. Formerly Humanities 155.

**160 Research Methods and Sources in Women's Studies (4) W.** Examines theoretical and practical avenues to understanding/conducting traditional/electronic library-based research. Explores structures/organization of knowledge/information, impact of feminist theories/methodologies on these structures, methods of access to information/scholarship on women and gender within multicultural framework. Prerequisite: Women's Studies 139. (VII-A)

**161 Topics in Lesbian and Gay Studies (4).** Explores issues in lesbian and gay studies from one or more of the following perspectives: theoretical, historical, literary, legal, economic, political, sociological, and representation in the arts. Prerequisite: Women's Studies 50A, 50B, or 50C. May be repeated for credit as topics vary. (VII-A)

**161B Issues in Lesbian and Gay Visual Representation (4).** History of lesbian and gay culture in relation to the visual and performing arts; the construction of sexual difference, debates around positive and negative representations, queer activism, and the intersections of sexuality with gender and race. Readings assigned. Prerequisite: Studio Art 10A-B-C or consent of instructor. May be taken for credit twice. Same as Studio Art 122.

**162 Racism and Sexism (4).** Examines the roles and intersection of racism, sexism, and heterosexism in United States culture and society. Through history and literature, explores the processes of immigration, colonization (of identity, language, and the body), and cultural interaction. Prerequisite: Women's Studies 50A, 50B, or 50C. (VII-A)

**163 Women of Color (4).** Examines the ways factors of ethnicity, class, gender, sexuality intersect in the lives of women of different ethnic groups in the U.S. (African-American, Asian and Asian American, Chicana/Latina, Native American.) Explores how differences and commonalities impact their current status in U.S. society. Prerequisite: Women's Studies 50A, 50B, or 50C. (VII-A)

**170 WOMEN'S STUDIES: LITERATURE AND LANGUAGE**

Cross-listed with literature and language courses whose topics relate to women and gender or which are taught from a feminist methodological perspective. Consult the Women's Studies Office for information.

**170CA Undergraduate Seminars in Literary Theory and Practice (4) F, W, S.** Each instructor announces a topic that joins theoretical considerations of contemporary literary study with the practical criticism of individual literary texts. May be repeated for credit as topics vary. Formerly Humanities 170CA.

**170CB Undergraduate Lectures in Comparative Literature (4) F, W, S, Summer.** 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. May be repeated for credit as topics vary. Same as English and Comparative Literature CL103 when topic is appropriate. Formerly Humanities 170CB.

**170CD The Interdisciplinary Course (4) F, W, S, Summer.** Treats interdisciplinary topics of various kinds (e.g., literature and politics, literature and religion, literature and science, literature and other arts). Open to all UCI students. Prerequisites: none for most topics; check with descriptions of individual course topics. May be repeated for credit as topics vary. Same as English and Comparative Literature CL104 when topic is appropriate. Formerly Humanities 170CD.

**170CE Multicultural Topics in Comparative Literature (4).** 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. Same as English and Comparative Literature CL 105 when topic is appropriate. (VII-A)

**170CF Multicultural Topics in English-Language Literature (4).** Treats the literary consequences of relations and conflicts between races, genders, classes, ethnic groups, and other forms of cultural identity prevalent at different moments in history. May be repeated for credit as topics vary. Same as English and Comparative Literature E 105 when topic is appropriate. (VII-A)

**170CL Topics in Classical Civilization (4).** Subject matter variable. May be repeated for credit as topics vary. Same as Classics 170 when topic is appropriate. Formerly Humanities 170CLA.

**170EC Topics in Chinese Literature and Society (4).** Studies in Chinese texts in their social and cultural context(s). Conducted in English. May be taken for credit three times as topics vary. Same as East Asian Languages and Literatures 110 when topic is appropriate. Formerly Humanities 170EC. (VII-B)

**170EJ Topics in Japanese Literature and Society (4).** Studies in Japanese texts in their social and cultural context(s). Conducted in English. May be taken for credit three times as topics vary. Same as East Asian Languages and Literatures 120 when topic is appropriate. Formerly Humanities 170EJ. (VII-B)

**170FA Topics in French Literature and Culture (4) F, W, S.** In English. May be repeated for credit as topics vary. Same as French 150 when topic is appropriate. Formerly Humanities 170FA. (VII-B)

**170FB Problems in French Culture (4).** Prerequisite: French 101A-B-C. May be repeated for credit as topics vary. Same as French 110 when topic is appropriate. (VII-B)

**170FC Francophone Literature and Culture (4).** Literatures and cultures of the Francophone world. Prerequisite: French 101A-B-C. May be repeated for credit as topics vary. Same as French 127 when topic is appropriate. (VII-B)

**170GA Topics in German Literature 750–1750 (4).** Specific course content determined by individual faculty members. Example: Luther and the European Renaissance. Prerequisite: German 101 or consent of instructor. May be repeated for credit as topics vary. Same as German 117 when topic is appropriate. Formerly Humanities 170GA. (VII-B)

**170GB Studies in the Age of Goethe (4).** Individual authors such as Lessing, Goethe, Schiller, Kleist, and Hölderlin, or the drama of the “angry young men” of the German 1770s. Prerequisite: German 101 or consent of instructor. May be repeated for credit as topics vary. Same as German 118 when topic is appropriate. Formerly Humanities 170GB. (VII-B)

**170GC Studies in Nineteenth-Century German Literature (4).** Individual authors such as Büchner, Grillparzer, Keller, and Nietzsche, or broader social-literary phenomena. Prerequisite: German 101 or consent of instructor. May be repeated for credit as topics vary. Same as German 119 when topic is appropriate. Formerly Humanities 170GC. (VII-B)

**170GD 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. Prerequisite: German 101 or consent of instructor. May be repeated for credit as topics vary. Same as German 120 when topic is appropriate. Formerly Humanities 170GD. (VII-B)

**170GE Topics in German Literature (4).** Literary topics not fully contained within the periods listed above, such as “German Comedy” and “The Novel from Wieland to Fontane.” Prerequisite: German 101 or consent of instructor. May be repeated for credit as topics vary. Same as German 130 when topic is appropriate. Formerly Humanities 170GE.

**170GF Writing About Literature (4).** In English. Requires at least 4,000 words of assigned composition based upon readings in German literature. Several essays required. Topics vary. Prerequisites: satisfaction of lower-division writing requirement; junior standing or consent of instructor. German majors given admission priority. Same as German 139 when topic is appropriate. Formerly Humanities 170GF.

**170GG Topics in Literary Theory and Criticism (4).** In English. Theoretical dimensions of literary criticism and the German philosophical tradition. Topics such as Marxism, Freudian thought, the German Idealistic tradition of aesthetics, Historicism, twentieth-century hermeneutics, Frankfurt School, and *Rezeptionsästhetik* are explored in theoretical, critical, and literary texts. May be repeated for credit as topics vary. Same as German 140 when topic is appropriate. Formerly Humanities 170GG.

**170GH German Literature in Translation (4) F, W, S.** Major German literary works in translation. Prerequisite: satisfaction of the lower-division writing requirement; junior standing. May be repeated for credit as topics vary. Same as German 150 when topic is appropriate. (VII-B)

**170GJ German Cinema (4).** Historical, theoretical, and comparative perspectives on German cinema. Same as German 160 when topic is appropriate. (VII-B)

**170PA Masterpieces of Luso-Brazilian Literature (4).** In-depth analysis of one period or major author of Portuguese literature or one period or major author of Brazilian literature. Prerequisite: Portuguese 1C or equivalent. May be repeated for credit as topics vary. Same as Portuguese 144 when topic is appropriate.

**170SA, SB Chicano Literature (4, 4).** Focus on contemporary Chicano literature in relation to Chicana literature, women's literature, American literature, and Latino literature. Prerequisite: Spanish 2C or 5 or equivalent; Spanish 10A-B highly recommended. Same as Spanish 140A, 140B when topic is appropriate. (VII-A)

**170SD Selected Topics in Spanish Literature (4).** Selection of representative topics in Spanish literature. Prerequisite: Spanish 2C or 5. May be repeated for credit as topics vary. Same as Spanish 185 when topic is appropriate. Formerly Humanities 170SD. (VII-B)

**170SE Peninsular Civilization (4).** Each quarter focuses on a different country or topic. Prerequisite: Spanish 10B or equivalent. May be repeated for credit as topics vary. Same as Spanish 110A when topic is appropriate. (VII-B)

**170SF Latin American Civilization (4).** Each quarter focuses on a different country or topic. Prerequisite: Spanish 10B or equivalent. May be repeated for credit as topics vary. Same as Spanish 110B when topic is appropriate. (VII-B)

**170SG Chicano History (4).** Explores the cultural history of the Chicano from pre-Columbian cultures, Colonial and Modern Mexico, to the Chicano experience in the United States. Prerequisite: Spanish 10B or equivalent. Same as Spanish 110C when topic is appropriate. (VII-A)

**170TA Undergraduate Seminars in Literary Theory (4) W, S.** Each instructor announces a theoretical topic deriving from Criticism 100A and explores it through a number of theoretical and literary texts. Prerequisite: English and Comparative Literature CR 100A. May be repeated for credit as topics vary. Formerly Humanities 170TA.

#### 171 WOMEN'S STUDIES: WOMEN IN HISTORY

Cross-listed with History courses whose topics relate to women and gender or which are taught from a feminist methodological perspective. Consult the Women's Studies Office for information.

**171A, B, C 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 History 146A, 146B, 146C.

**171A: American Women to 1820 (4). (VII-A)**

**171B: American Women 1820-1980 (4). (VII-A)**

**171C Topics in Women and Gender Relations in the U.S. (4).** May be repeated for credit as topics vary. (VII-A)

**171D Colloquium (4).** 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. Prerequisite: Junior/senior standing and history major or consent of instructor. May be repeated for credit when topics vary. Same as History 190 when topic is appropriate. Formerly Humanities 171D.

**171E 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. Prerequisite: History 190 in the preceding quarter; junior or senior standing; and history major or consent of instructor. May be taken for credit a total of six times. Same as History 192 when topic is appropriate. Formerly Humanities 171E.

**171F Topics in History of Women in Europe (4).** May be repeated for credit as topics vary. Same as History 128. Formerly Women's Studies 171F, 171G. (VII-B)

**171G Special Studies in Social History (4).** May be repeated for credit when topics vary. Same as History 180 when topic is appropriate. Formerly Women's Studies 171C.

#### 173 WOMEN'S STUDIES: PHILOSOPHY

Cross-listed with Philosophy courses whose topics relate to women and gender or which are taught from a feminist methodological perspective. Consult the Women's Studies Office for information.

**173A Topics in Feminism (4).** A study of selected topics in feminist theory and/or gender studies. Same as Philosophy 152. May be repeated for credit as topics vary.

**173B Race and Gender (4).** Investigation of philosophical issues concerning race and gender, e.g., the grounding of these concepts (is it scientific or social?); race, gender, and individual self-conception; race and ethnicity; "color-blind" society; group solidarity versus racism; affirmative action; multiculturalism. Same as Philosophy 131E. (VII-A)

#### 174 WOMEN'S STUDIES: WOMEN AND THE ARTS

Cross-listed with courses in the arts whose topics relate to women and gender or which are taught from a feminist methodological perspective. Consult the Women's Studies Office for information.

**174A Studies in Film Genre (4).** Analytical and theoretical approaches to the serial productions we call "genre" films; the pattern of recognition known as westerns, weepies, musicals, horror films, and others. Prerequisites: Film Studies 101A-B-C or consent of instructor. May be repeated for credit as topics vary. Same as Film Studies 112 when topic is appropriate.

**174CA, CB, CC, CD Studies in Modern Art F, W, S.** Varying topics within the period 1789 to 1940. Works of art are studied as cultural, social, and political practices. Same as Art History 133A, 133B, 133C, 133D when topic is appropriate. May be repeated for credit as topics vary.

**174CA Topics in Modern Art (4).** Varies with each offering. Consult the instructor for specific topic.

**174CB Realism and Impressionism: 1830-1880 (4).**

**174CC Symbolism through Cubism: 1880-1920 (4).**

**174CD Visual Culture between the Two World Wars: 1920-1940 (4).**

**174D Studies in Contemporary Art (4).** Varying topics within the period 1940 to the present. Examples: Abstract Expressionism, Performance Art. Works of art are studied as cultural, social, and political practices. May be repeated for credit as topics vary. Same as Art History 140 when topic is appropriate.

**174E Criticism of Art (4).** Selected topics discussed on the theoretical and/or practical dimensions of art historical criticism. May be repeated for credit as topics vary. Same as Art History 180 when topic is appropriate.

**174H Special Topics in Studio Art (4).** Prerequisite: Studio Art 10A-B-C, upper-division standing, or consent of instructor. Same as Studio Art 100 when topic is appropriate. May be taken for credit six times as topics vary.

**174I Studio Problems: Methods and Materials (4).** An open media discussion and critique course emphasizing the development of working ideas and the execution of projects in all media. Readings assigned as required; field trips, slide and film/video presentations are integral. Prerequisites: two intermediate courses. May be repeated for credit as topics vary. Same as Studio Art 191 when topic is appropriate.

**174J Feminist Issues in Studio Art (4).** Feminist perspectives and topics in relation to cultural production. Feminist debates on sexuality, perspectives of women of color on race and gender, feminist film criticism, histories of the first and second waves of feminism, histories of feminist art. Prerequisite: Art Studio 10A-B-C or consent of instructor. Same as Studio Art 116.

#### 180 WOMEN'S STUDIES: ANTHROPOLOGY

Cross-listed with Anthropology courses whose topics relate to women and gender or which are taught from a feminist methodological perspective. Consult the Women's Studies Office for information.

**180A Cross-Cultural Studies of Gender (4).** Familiarizes students with the diversity of women's experiences around the world. Gender roles and relations are examined within cultural and historical contexts. A central concern is how class, race, and global inequalities interact with women's status. Prerequisite: Anthropology 2A or 2B. Same as Anthropology 121D. Formerly Humanities 172F. (VII-B)

**180B 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 Anthropology 163G. Formerly Humanities 172J. (VII-B)

**180C Psychological Anthropology (4).** Cultural differences and similarities in personality and behavior. Child-rearing practices and consequent adult personality characteristics; biocultural aspects of child development and attachment; evolutionary models of culture and behavior; politically linked personality; cognitive anthropology; psychology of narrative forms; comparative national character studies. Prerequisite: Anthropology 2A or Psychology 7A or Psychology 9A-B-C. Same as Anthropology 132A and Psychology 173A.

**180D 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. Same as Anthropology 125X. (VII-A)

**180E Peoples of the Pacific (4).** The cultural history and recent developments among the Pacific peoples of Polynesia, Micronesia, Melanesia, New Guinea, and Australia. Same as Anthropology 163A. (VII-B)

**180F 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 and Political Science 154B. (VII-B)

**180G Colonialism and Gender (4).** An anthropological enquiry into the ways colonial relations of power have been structured and gendered throughout the world, and to what effect. Examines the social locations of men and women in the everyday exercises of colonial and imperial power. Same as Anthropology 136G.

**180H Gender and Cultural Identity (4).** Explores how anthropological traditions of studying symbolic classification might be connected with contemporary issues involving the political and cultural classification of people along the crosscutting axes of gender, race, ethnicity, culture, and nationality. Same as Anthropology 136J.

**180L The Woman and the Body (4).** Probes culture and politics of the female body in late twentieth-century American life. Focusing on "feminine beauty," examines diverse notions of beauty, bodily practices, and body politics embraced by American women of different classes, ethnicities, and sexualities. Same as Anthropology 136K. (VII-A)

#### **181 WOMEN'S STUDIES: COGNITIVE PSYCHOLOGY**

Cross-listed with Psychology courses whose topics relate to women and gender or which are taught from a feminist methodological perspective. Consult the Women's Studies Office for information.

**181A Social Psychology of African-American Families (4).** Social psychological analysis of African-American families from an Afro-centric perspective with examination of historical and contemporary factors which affect their structure and functioning and the psychosocial development of family members. Issues and challenges in the twenty-first century. Same as Psychology 174B. (VII-A)

#### **182 WOMEN'S STUDIES: ECONOMICS**

Cross-listed with Economics courses whose topics relate to women and gender or which are taught from a feminist methodological perspective. Consult the Women's Studies Office for information.

#### **183 WOMEN'S STUDIES: SOCIOLOGY**

Cross-listed with Sociology courses whose topics relate to women and gender or which are taught from a feminist methodological perspective. Consult the Women's Studies Office for information.

**183A 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 Sociology 178. Formerly Humanities 172E.

**183B 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 Sociology 111. Formerly Humanities 172D.

**183C Sociology of Gender (4).** Concepts of gender roles and the impact of gender on women and men. Theoretical and academic research on social experiences. Historical analysis of American gender roles, sexual politics, negative and positive aspects, evaluations of current trends and future implications. Women of color. Same as Sociology 161. Formerly Humanities 172H. (VII-A)

#### **184 WOMEN'S STUDIES: POLITICS AND SOCIETY**

Cross-listed with Political Science courses whose topics relate to women and gender or which are taught from a feminist methodological perspective. Consult the Women's Studies Office for information.

#### **185 WOMEN'S STUDIES: SOCIAL SCIENCES**

Cross-listed with Social Sciences courses whose topics relate to women and gender or which are taught from a feminist methodological perspective. Consult the Women's Studies Office for information.

#### **186 WOMEN'S STUDIES: LINGUISTICS**

Cross-listed with Linguistics courses whose topics relate to women and gender or which are taught from a feminist methodological perspective. Consult the Women's Studies Office for information.

**186A Sociolinguistics (4).** Sociolinguistic varieties of language examined from different points of view: geographical, temporal, and cultural. Prerequisite: Linguistics 3. Same as Linguistics 168A and Anthropology 122S. Formerly Humanities 170LA.

#### **187 WOMEN'S STUDIES: SOCIAL ECOLOGY**

Cross-listed with Social Ecology courses whose topics relate to women and gender or which are taught from a feminist methodological perspective. Consult the Women's Studies Office for information.

**187A Work and Family (4).** Effects of employment and unemployment on mental health and marital quality; effects of work on parenting and child development; corporate and social policies for "families that work"; young adults' decision-making about work and family. Prerequisite: upper-division standing or consent of instructor. Same as Psychology and Social Behavior P170P.

**187B Development of Gender Differences (4).** Examination of research on how sexes differ in physiology, cognitive functioning, personality, and social behavior. Sex-differentiated development from prenatal period through adulthood. Explanations for male-female differences are sought, focusing on biological (genetic, hormonal) and social (familial, cultural) mechanisms. Prerequisite: Psychology and Social Behavior P9. Same as Psychology and Social Behavior P122D.

**187C Impacts of Divorce (4).** Examines divorce in historical, economic, and, primarily, psychological contexts, emphasizing recent research pertaining to the impacts of divorce on children, families, and society. Prerequisite: Psychology and Social Behavior P9. Same as Psychology and Social Behavior P171P.

**187D The Family (4).** 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. Same as Environmental Analysis and Design E111 and Psychology and Social Behavior P168P.

**187E Human Sexuality (4) F.** A broad survey of human sexuality encompassing genetic factors, physiological and anatomical development, customary and atypical forms of behavior, reproductive processes, and cultural determinants. Same as Psychology and Social Behavior P121D.

#### **188 WOMEN'S STUDIES: GENDER AND SCIENCE**

**188A Human Genetics and Women's Issues (4) F.** Survey of human genetics with a focus on diseases and issues with particular relevance to or impact on women. Explores ethical, legal, social, and policy implications and the application of feminist theories to concerns and controversies in human genetics.

#### **WOMEN'S STUDIES: SPECIAL COURSES**

**197 Senior Seminar in Women's Studies (4) S.** Capstone seminar designed for students completing work in Women's Studies. Students read advanced scholarship in Women's Studies, pursue research on a specific topic concerning women, and complete a thesis or senior project which is presented to the seminar. Prerequisite: Women's Studies 139 and 160. (VII-A)

**198 Directed Group Study (4).** Special topics through directed reading. Paper required. Prerequisite: consent of instructor. May be taken for credit three times as topics vary.

**199 Directed Research (1 to 4) F, W, S.** Directed reading and research in consultation with a faculty member. Substantial written work required. Prerequisite: consent of sponsoring faculty member.

### **GRADUATE**

**200A Current Issues in Feminist Theories (4) F, W, S.** Seminar in basic categories of analysis in feminist and gender theories and fundamental issues in current feminist theoretical debates from the perspectives of diverse cultures and groups.

**200B Problems in Feminist Research (4) F, W, S.** Proseminar colloquium on analytical approaches to feminist research and/or creative activity in a wide range of disciplines in the humanities, social and behavioral sciences, and the arts. Prerequisite: Women's Studies 200A.

**201 Special Topics in Feminist Theory (4) F, W, S.** Seminars on various topics in feminist theory. Prerequisite: Women's Studies 200A-B. May be repeated for credit as topics vary.



## ADDITIONAL OPPORTUNITIES FOR INTERDISCIPLINARY STUDY

### Minor in Global Sustainability

321 Steinhaus Hall; (714) 824-6006; Fax (714) 824-2181

Peter J. Bryant and Peter A. Bowler, **Co-directors**

#### Core Faculty

Peter A. Bowler, Ph.D. University of California, Irvine, *Associate Adjunct Professor of Ecology and Evolutionary Biology and of Environmental Analysis and Design, and UC Natural Reserve System Academic Coordinator*

Peter J. Bryant, Ph.D. University of Sussex, *Director of the Developmental Biology Center and Professor of Biological Sciences*

Michael Burton, Ph.D. Stanford University, *Professor of Anthropology*  
William S. Reeber, Ph.D. The Johns Hopkins University, *Professor of Earth System Science*

Susan E. Trumbore, Ph.D. Columbia University, *Assistant Professor of Earth System Science*

The interdisciplinary minor in Global Sustainability trains students to understand the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on this planet. As a result of population growth and the pursuit of higher standards of living, humanity has initiated many global trends that cannot be sustained indefinitely. Some of these trends are physicochemical in nature, such as the rapid depletion of fossil fuels and the increasing pollution of our environment, including the accumulation of ozone-depleting chemicals with consequent increase of ultraviolet radiation at the earth's surface, and the buildup of carbon dioxide that is almost certainly causing global warming.

Other trends are biological ones including the degradation of agricultural land, the destruction of many kinds of wildlife habitat with associated high rates of species extinction, and the depletion of wildlife populations by over-exploitation. Global changes are also taking place in the human situation including loss of cultural diversity, a growing income gap between rich and poor nations leading to deepening poverty and additional pressure for biological resource exploitation, accelerating urbanization with associated social problems, and regional population and economic imbalances leading to escalating political tensions and potential for conflict. This program examines the causes of, and interrelationships between, these problems and considers new approaches to solving them. Its goal is to provide broad, interdisciplinary training that will allow students to better understand and effectively deal with the serious environmental problems that we will face in the twenty-first century.

The minor is open to all UCI students. Course descriptions are available in the academic unit sections of the *Catalogue*.

### REQUIREMENTS FOR THE MINOR

**Completion of an introductory sequence of three core courses:** Earth System Science 10 (The Physical Environment), Biological Sciences 1D (when topic is Biological Conservation), and Anthropology 20A (People, Cultures, and Environmental Sustainability; same as Environmental Analysis and Design E20),

**Three relevant elective courses (12 units):** One elective course must be taken in each of the following three disciplines, and at least two of these must be upper division. Students may select from the following list and must have their choices approved by a panel of participating faculty:

*Biological Sciences:* 1C (when topic is Introduction to Ecology), 1D (when topics are California Natural History, and Civilization and Disease), 91 (Origin of Life and Biological Evolution), 94 (Diversity of Life), 96 (Ecology), 118 (Microbial Ecology of Natural

and Polluted Waters), 150 (Conservation Biology), 175 (Restoration Ecology), 178 (Ocean Ecology), 179 (Limnology and Freshwater Biology), 186 (Population and Community Ecology), 181 (Conservation in the American West).

*Physical Sciences/Engineering:* Earth System Science 16 (Physics and Global Issues), 20C (Geophysics: The Making of the Earth), 20E (The Global Environment: Atmospheric Pollution), 20F (The Global Environment: Climate, Oceans, and Land); Engineering 20 (Energy and Society); Civil Engineering 125 (Transportation Engineering), 126 (Transportation Systems Analysis and Design), 127 (Traffic Engineering).

*Social Sciences/Social Ecology:* Anthropology 125A (Economic Anthropology), 125B (Ecological Anthropology); Environmental Analysis and Design E3 (Human Environments), E5 (Introduction to Environmental Quality and Health), E8 (Introduction to Environmental Analysis), E15 (Native American Religions and the Environmental Ethic), E105U (Environmental Law), E106 (Human Ecology), E146 (Dynamics of Human Populations) E154 (Environmental Ethics and the American Lands); Economics 145E (Economics of the Environment); Political Science 149B (Global Environmental Politics); Social Sciences 172E (Native American Culture); Sociology 44 (Populations).

**Senior Seminar on Global Sustainability I, II, III:** During their final year in this program, students complete Biological Sciences 191A-B-C (same as Earth System Science 190A-B-C and Social Ecology 186A-B-C) which includes a seminar, directed study, and independent research in a relevant area. This work forms the basis for a senior research paper which is completed and presented near the end of spring quarter in a colloquium.

### Minor in Native American Studies

#### Participating Faculty

Kathryn Nakagawa, Ph.D. Northwestern University, *Assistant Professor of Education*

Richard Perry, J.D. Stanford University, *Assistant Professor of Social Ecology*

Jaime E. Rodríguez, Ph.D. University of Texas, *Professor of History*

Gabriele Schwab, Ph.D. University of Konstanz, *Professor of English and Comparative Literature*

Tanis Thorne, Ph.D. University of California, Los Angeles, *Assistant Adjunct Professor of History and Social Ecology*

Steven C. Topik, Ph.D. University of Texas, *Chair of the Department of History and Associate Professor of History*

The minor in Native American Studies is an interdisciplinary, inter-school program which focuses on history, culture, religion, and the environment. The three core courses serve as an introduction to the Native American experience from the perspective of different historical periods and frameworks of analysis. Study in the minor is enriched by the research and teaching interests of faculty from different departments.

The minor is open to all UCI students. Advising information is available from the undergraduate counseling offices in the Schools of Humanities, Social Ecology, and Social Sciences.

Course descriptions are available in the academic unit sections.

#### Requirements for the Minor

**Core courses:** Environmental Analysis and Design E15 (Native American Religions and the Environmental Ethic); History 15A (Native American History); and Sociology 65 (Cultures in Collision: Indian-White Relations Since Columbus; same as Anthropology 85A).

**Four upper-division courses selected from:** Anthropology 121D (Cross-Cultural Studies of Gender, same as Women's Studies 180A), 135A (Religion and Social Order), 162A (People and Cultures of Latin America); Art History 175 (Studies in Native and Tribal Art); Education 124 (Perspectives on Multicultural Education); History

161A (Indian and Colonial Societies); Philosophy 131E (Race and Gender, same as Women's Studies 173B); Social Sciences 172E (Native American Culture), 175B (Ethnic and Racial Communities); Women's Studies 162 (Racism and Sexism), 163 (Women of Color).

Students may also select from the following courses when the topics presented relate to Native American Studies: Comparative Literature 105 (Multicultural Topics in Comparative Literature); English 105 (Multicultural Topics in English-Language Literature); Sociology 149 (Special Topics: Structures), 169 (Special Topics: Age, Gender, Race, and Ethnicity).

## Minor in Religious Studies

320 Humanities Office Building: (714) 824-3841

Daniel J. Schroeter, *Director*

Stephen A. Barney, Ph.D. Harvard University, *Professor of English*

Luci Berkowitz, Ph.D. The Ohio State University, *Research Professor of Classics*

Victoria Bernal, Ph.D. Northwestern University, *Associate Professor of Anthropology*

Dickson D. Bruce, Jr., Ph.D. University of Pennsylvania, *Professor of History*

Steven D. Carter, Ph.D. University of California, Berkeley, *Chair of the Department of East Asian Languages and Literatures and Professor of Japanese*

Yong Chen, Ph.D. Cornell University, *Assistant Professor of History and Asian American Studies*

Chungmoo Choi, Ph.D. Indiana University, *Associate Professor of Korean Culture*

Peter Clecak, Ph.D. Stanford University, *Professor of Social Ecology*

Mary Corey, M.A. University of California, Riverside, *Certified Professional Labanotator, Associate Professor of Dance*

Edward Fowler, Ph.D. University of California, Berkeley, *Associate Professor of Japanese*

Richard I. Frank, Ph.D. University of California, Berkeley, *Associate Professor of History and Classics*

Michael A. Fuller, Ph.D. Yale University, *Associate Professor of Chinese*

Alexander Gellay, Ph.D. Yale University, *Professor of Comparative Literature*

James B. Given, Ph.D., Stanford University, *Professor of History*

Anna Gonosová, Ph.D. Harvard University, *Associate Professor of Art History*

Lamar M. Hill, Ph.D. University of London, *Professor of History*

Judy C. Ho, Ph.D. Yale University, *Associate Professor of Art History*

Susan B. Klein, Ph.D. Cornell University, *Assistant Professor of Japanese*

Richard W. F. Kroll, Ph.D. University of California, Los Angeles, *Associate Professor of English*

Karen Leonard, Ph.D. University of Wisconsin, *Professor of Anthropology*

Julia Reinhard Lupton, Ph.D. Yale University, *Associate Professor of Comparative Literature*

Steven Mailloux, Ph.D., University of Southern California, *Associate Dean of Humanities, Graduate Study, and Professor of English*

Liisa Malkki, Ph.D. Harvard University, *Assistant Professor of Anthropology*

Sanjoy Mazumdar, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Social Ecology*

Margaret M. Miles, Ph.D. Princeton University, *Associate Professor of Art History*

Alan Nelson, Ph.D. University of Illinois at Chicago, *Associate Professor of Philosophy*

Keith L. Nelson, Ph.D. University of California, Berkeley, *Professor of History*

Terence D. Parsons, Ph.D. Stanford University, *Professor of Philosophy*

Nelson C. Pike, Ph.D. Harvard University, *Professor Emeritus of Philosophy*

Kenneth L. Pomeranz, Ph.D. Yale University, *Associate Professor of History*

Daniel J. Schroeter, Ph.D. University of Manchester, *Director of Religious Studies, Associate Professor of History, and Teller Family Chair in Jewish History*

Martin Schwab, Ph.D., University of Bielefeld, *Associate Professor of Comparative Literature and Philosophy*

Deane H. Shapiro, Jr., Ph.D. Stanford University, *Professor of Psychiatry and Human Behavior, and Social Ecology in Residence*

Daniel Stokols, Ph.D. University of North Carolina, *Dean of the School of Social Ecology and Professor of Social Ecology*

Timothy Tackett, Ph.D. Stanford University, *Professor of History*

Religious Studies is an interdisciplinary minor that focuses on the comparative study of religions in various cultural settings around the world. The curriculum seeks to provide a wide-ranging academic understanding and knowledge of the religious experience in society through study in the Schools of Humanities, Social Science, Social Ecology, and the Arts.

The minor is open to all UCI students. Course descriptions are available in the academic unit sections of the *Catalogue*.

### Requirements for the Minor

**Three Core courses:** Humanities 5A (World Religions I), 5B (World Religions II), and 5C (Dimensions of Religion). The first quarter is an introduction to the history, doctrine, culture, and writing of Judaism, Christianity, and Islam. The second quarter is an introduction to various religious traditions in selected areas of the world, including India, East Asia, Africa, the Americas, or elsewhere. The third quarter examines aspects of religious expression, including symbolization of the sacred, collective religious behavior, and religious dissent.

**Four-upper division courses**, two of which must be outside of the student's major. At least one of these courses should focus on a primarily Asian religion, and at least one should focus on Judaism, Christianity, or Islam. Students select their courses, in consultation with the Religious Studies faculty, from a quarterly list which is available in the School of Humanities Undergraduate Studies Office.

The following courses are representative of those available:

Anthropology 135H (Religion in South Asia); Art History 112 (Early Christian and Byzantine Art), 152 (Chinese Buddhist Art); Classics 165 (New Testament Literature); English and Comparative Literature 103 (Jews and Muslims in Renaissance; Bible and Interpretation); East Asian 120 (Religion in Japanese Literature); History 110D (Heresy), 130B (Modern Jewish History), 135B (Science and Religion); Philosophy 123 (Philosophy of Religion); Women's Studies 150 (Feminism and Religion).

With approval of the Religious Studies faculty, relevant lower-division courses may be substituted for an upper-division course. The following are courses that could apply: Dance 90A (Dance History); Philosophy 11 (History of Medieval Philosophy); Sociology 56 (Society and Religion), 59 (Religion, Women, Society).

**A Two-Quarter Senior Seminar in Religious Studies:** Humanities 105 A-B, which includes the completion of a senior paper.

# GRADUATE SCHOOL OF MANAGEMENT

## Dennis J. Aigner, *Dean*

220 Graduate School of Management  
Graduate and Undergraduate Counseling: (714) 824-5232  
Fax: (714) 824-2235  
E-mail: gsm-mba@uci.edu  
World Wide Web: <http://www.gsm.uci.edu/>

## 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, *Associate Professor of Management and of Information and Computer Science* (information system architectures, competitive information systems, information technology and industrial organization)
- Michael W. Berns, Ph.D. Cornell University, *Professor of Surgery, Cell Biology, Ophthalmology, Radiology, and Management, and Arnold and Mabel Beckman Chair in Laser Biomedicine*
- 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)
- Thomas C. Buchmueller, Ph.D. University of Wisconsin, Madison, *Assistant Professor of Management* (economics of health care)
- Nai-Fu Chen, Ph.D. University of California, Berkeley; Ph.D. University of California, Los Angeles, *Professor of Management* (financial investments, numerical analysis of systems of algebraic and differential equations, contingent claims)
- Soo Hong Chew, Ph.D. University of British Columbia, *Professor of Economics and Management* (economics of information and uncertainty, experimental economics)
- Charles J. Culy, Ph.D. Stanford University, *Assistant Professor of Management* (market microstructure, futures markets)
- Imran S. Currim, Ph.D. Stanford University, *Professor of Management* (marketing management, modeling, research, strategy, new products)
- Joseph F. DiMento, Ph.D., J.D. University of Michigan, *Professor of Social Ecology and Management* (planning, land use and environmental law, use of social science in policy making, legal control of corporate behavior)
- P. Christopher Earley, Ph.D. University of Illinois, *Professor of Management* (industrial/organizational psychology, social and quantitative psychology)
- Marta M. Elvira, Ph.D. University of California, Berkeley, *Assistant Professor of Management* (organizational reward structures, strategic human resources, international management, comparative institutional analysis, organizational diversity)
- 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 Social Ecology, and FHP Foundation Chair in Health Care Management* (economics of health care)
- Mary C. Gilly, Ph.D. University of Houston, *UCI Associate Dean for Research and Associate Professor of Management* (marketing management, marketing for nonprofit organizations, consumer behavior, services marketing)
- Dan Givoly, Ph.D. New York University, *Acting Professor of Management* (effects of financial disclosure on stock prices, quality and information content of accounting numbers)
- John Graham, Ph.D. University of California, Berkeley, *Professor of Management* (international marketing, management and strategy, international business negotiations, managing firms in volatile environments)
- Vijay Gurbaxani, Ph.D. University of Rochester, *Associate Professor of Management and of Information and Computer Science and Graduate School of Management Associate Dean of Academic Degree Programs* (information technology and business strategy; economics of information systems management; impact of information technology on organizations and market structure)
- Robert A. Haugen, Ph.D. University of Illinois, *Professor of Management* (corporate finance and investments)
- Carla Hayn, Ph.D. University of Michigan, *Assistant Professor of Management* (financial reporting, taxation and mergers, and acquisitions)
- Joanna L. Ho, Ph.D. University of Texas at Austin, *Associate Professor of Management* (human information processing systems, behavioral issues in auditing and accounting)
- Philippe Jorion, Ph.D. University of Chicago, *Professor of Management and Graduate School of Management Associate Dean of Executive Programs* (international finance)
- L. Robin Keller, Ph.D. University of California, Los Angeles, *Associate Professor of Management* (decision analysis, risk analysis, problem structuring, management science)
- John Leslie King, Ph.D. University of California, Irvine, *Professor of Information and Computer Science and of Management* (computer technology, management and economics of computing, management information systems)
- 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 of Information and Computer Science, Director of the Center for Research on Information Technology and Organizations, and Graduate School of Management Associate Dean of Research* (organizational impacts of computing, management of computing, information technology and public policy)
- Newton Margulies, Ph.D. University of California, Los Angeles, *Professor Emeritus of Management* (organizational behavior, organizational change and development, analysis of team functioning, organizational behavior in health care organizations)
- Joseph W. McGuire, Ph.D. Columbia University, *Professor Emeritus of Management* (business strategy, entrepreneurship, organizational economics)
- Martin C. McGuire, Ph.D. Harvard University, *Professor of Economics and Management, and Clifford and Elaine Heinz Chair in the Economics and Public Policy of Peace* (economic theory of group formation and behavior, economic models of international conflict, interactions between trading partnerships and military alliances in the structure of international relations)
- Richard B. McKenzie, Ph.D. Virginia Polytechnic Institute and State University, *Professor of Management and Walter B. Gerken Chair in Enterprise and Society* (applied microeconomics and public sector economics)
- Alexander Mood, Ph.D. Princeton University, *Professor Emeritus of Management*
- Barrie R. Nault, Ph.D. University of British Columbia, *Assistant Professor of Management* (management information systems)
- Peter Navarro, Ph.D. Harvard University, *Associate Professor of Management and Social Ecology* (electric utilities regulation, growth management, industrial policy, public policy)
- Paul Olk, Ph.D. University of Pennsylvania, The Wharton School, *Assistant Professor of Management* (organization theory, strategic alliances, international management)
- Jone Pearce, Ph.D. Yale University, *Professor of Management* (organizational behavior, human resources management, organizational transformation in formerly communist countries, voluntary associations)
- Cornelia Pechmann, Ph.D. Vanderbilt University, *Associate Professor of Management* (consumer behavior, advertising strategy, health care marketing, evaluation research)
- Lyman W. Porter, Ph.D. Yale University, *Faculty Assistant to the Executive Vice Chancellor and Professor Emeritus of Management* (organizational behavior, management education, personnel management)
- Judy B. Rosener, Ph.D. Claremont Graduate School, *Senior Lecturer in Management and Social Ecology* (business and government, cultural diversity, gender and management)

- Carlton H. Scott, Ph.D. The University of New South Wales, *Professor of Management* (operations research, production management, total quality management, statistics)
- Kut C. So, Ph.D. Stanford University, *Associate Professor of Management* (design of production and inventory systems, optimization of queuing systems, operations research)
- Jing-Sheng Song, Ph.D. Columbia University, *Assistant Professor of Management* (operations research, operations management)
- Neal M. Stoughton, Ph.D. Stanford University, *Associate 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, *Professor of Management* (corporate finance, taxation, financial markets)
- Anne S. Tsui, Ph.D. University of California, Los Angeles, *Associate Professor of Management* (organization and behavioral sciences)
- Rajeev Tyagi, Ph.D. University of Pennsylvania, *Acting Assistant Professor of Management* (new product introductions)
- Alladi Venkatesh, Ph.D. Syracuse University, *Associate Professor of Management* (market segmentation, sociology of consumption, marketing theory, and macromarketing)
- Margarethe F. Wiersema, Ph.D. University of Michigan, *Associate Professor of Management* (strategic management, corporate restructuring, core competencies, executive succession)
- William F. Wright, Ph.D. University of California, Berkeley, *Associate Professor of Management* (behavioral decision making and auditing/accounting decisions, nature of expert judgments, artificial intelligence/expert systems)

#### Adjunct Faculty and Lecturers

- Robert W. Allen, Ph.D. University of California, Irvine, *Lecturer in Management* (organizational behavior)
- George C. Davis, M.S. University of Southern California, *Lecturer in Management* (real estate, land economics)
- Stuart Eriksen, Ph.D. University of California, Irvine, *Lecturer in Management* (decision sciences)
- Nathan Franke, M.B.A. University of California, Irvine, *Lecturer in Management* (accounting)
- George Marcoulides, Ph.D. University of California, Los Angeles, *Lecturer in Management* (decision sciences)
- James Ragan, M.A. University of California, Berkeley, *Lecturer in Management* (bargaining, negotiations, conflict resolution)

## OVERVIEW

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 and is intended to provide future managers with a firm foundation in the basic disciplines and in management tools and techniques; the Ph.D. in Administration is for those who wish to pursue a career in scholarly research.

## 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 and the early twenty-first century (significant trends, conditions, and problems); history of science, sci-

entific inquiry, and the philosophy of science; economic, political, and social analysis.

**A Global Perspective.** An in-depth knowledge of how to manage companies in the global environment of the future, how business is done in the major economic centers throughout the world, and ways in which cultural and historical factors influence business transactions.

**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; human resources policies; techniques for measuring and affecting attitudes and behavior; research design and strategies.

**Information Technology.** How technology affects organizations and markets, and how to use information to create new strategic options and gain a lasting competitive advantage.

**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 92697-3125; e-mail: [gsm-mba@uci.edu](mailto:gsm-mba@uci.edu); World Wide Web: <http://www.gsm.uci.edu/>.

## Doctor of Philosophy in Administration

GSM admits students for the Ph.D. in the fall quarter only. The deadline for application is February 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 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 and decision technologies, 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.

The Ph.D. program is divided into two phases: qualification and dissertation. In the qualification phase the student prepares for dissertation research in an area of specialization. This phase is completed when an oral qualifying examination is passed and the candidacy committee recommends advancement to candidacy for the Ph.D. The 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. Students are expected to complete the Ph.D. in four to five years.

## Master's Degree Programs

GSM offers a variety of programs leading to the M.B.A. (Master of Business Administration) degree. These include a two-year, full-time M.B.A. program; a 21-month Executive M.B.A. program; a two-year Health Care Executive M.B.A. program; and a three-year Fully Employed M.B.A. program.

### M.B.A. PROGRAM

GSM admits students to the two-year, full-time M.B.A. Program in the fall quarter. Students from a variety of undergraduate disciplines, including liberal arts, social sciences, physical or biological sciences, computer science, and engineering, are encouraged to apply. The deadline for completion of all phases of the application procedure is April 1. In addition to the general University rules governing admission to graduate study, GSM normally requires the following:

1. Completion of the Graduate Management Admission Test (GMAT).
2. Completion of a course in both introductory calculus and statistics with probability with a grade of B or better. Undergraduate courses in the social sciences (e.g., economics, psychology, sociology), information and computer sciences, and accounting 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 evaluation of an applicant's file for admission consists of an integrated assessment of all materials submitted including test scores, transcripts of previous academic work, statements on application forms, and letters of recommendation. Above and beyond these factors, substantive work experience is given serious consideration in the evaluation process.

The full-time M.B.A. program requires a minimum of 23 quarter courses (92 units) with a minimum grade point average of 3.0 in the Core and overall. The curriculum consists of courses divided into two groups designed to achieve specific educational objectives. The courses are divided as follows: 12 required Common Core Courses and 11 elective courses which students select to emphasize career goals and educational interests. A thesis is not required.

**Required Course Work.** Common Core Courses, each of which is four units, are: Management of Complex Organizations, Statistics for Management, Management Science or Operations Management, Organizational Analysis for Management, Financial and Managerial Accounting for Management, Microeconomics, Macroeconomics for Management or Government and Public Policy, Information Technology for Management, Marketing for Management, Managerial Finance, Business Strategy.

**International Requirement.** Students must fulfill the international requirement in one of the following ways; completion of a GSM international elective in a functional area; participation in a GSM international exchange program; or completion of an upper-division or graduate international course offered by a University of California school, with the approval of the GSM Associate Dean.

**Electives.** Eleven electives are required. The major emphasis in the elective courses is to develop additional depth in a discipline or interdisciplinary area or specialized competence in the use of a particular set of technical tools and methods. Students select their electives in light of their educational and career goals and interests.

### The 3-2 Program for Undergraduates

In addition to the full-time Master's program for students who have already received a bachelor's degree, outstanding UCI undergraduate students may apply to enter a cooperative 3-2 Program with GSM and most other campus units. Acceptance into the 3-2 Program constitutes advanced admission to the graduate program. Such students complete their undergraduate major requirements by the end of their junior year. During their senior year, they take graduate courses in GSM. These courses are used to satisfy their undergraduate unit requirements, and at the same time apply toward their graduate degree. Successful completion of the requirements in the program normally leads to the bachelor's degree in the cooperating discipline after the fourth year, and the M.B.A. degree after the fifth year. Students should consult with their academic counselor in their major School 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.

### Special Opportunities

Within the M.B.A. program, GSM has created the Professional Track in Information Technology (IT), an intensive curriculum that provides students with sophisticated, state-of-the-art knowledge and practical experience in this rapidly evolving arena. Students admitted into the Professional Track in IT form a separate cohort who take the customary M.B.A. core courses, augmented by a set of IT applications courses in the functional areas. In addition, many of the electives are specialized courses that reflect the changing nature of organizational management. Representative electives

are: Electronic Commerce, Information Technology and Organizational Forms for the Twenty-First Century, Information Technology and Financial/Capital Markets, Information Technology and Managerial Decision Making, Financial Decision Support and Expert Systems, Information Technology and the Consumer, Marketing Research, and Forecasting. Additional activities designed to supplement this innovative curriculum include seminars given by industry leaders and relevant internships.

Admission into the Professional Track in IT is competitive and a limited number of spaces are available. In addition to the standard admissions criteria, the Admissions Committee is particularly interested in how prospective candidates envision the current role and future potential of information technology in business.

The Graduate School of Management offers course work in Health Care Management within the M.B.A. program. The courses provide training not only in health care and related issues, but also expose students to professionals in the areas of management, finance, marketing, and strategic planning. Skills in these areas are critical to the success of health care organizations in the late 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 in the full-time program can gain first-hand knowledge of the culture and management practices of other industrialized countries by participating in an academic exchange with universities located abroad. This experience, combined with 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 ESSEC Graduate School of Management, Cergy-Pontoise, France; Katholieke University, Leuven, Belgium; Tsinghua University, Beijing, China; Budapest University of Economic Sciences (BUES), Budapest, Hungary; Vienna University of Economics and Business Administration, Vienna, Austria; ITESM (The Monterrey Institute of Technology and Higher Education), Monterrey, Mexico; Bocconi University, Milan, Italy; Swedish School of Economics and Business Administration, Helsinki, Finland; and Hong Kong University of Science and Technology, Kowloon, Hong Kong.

To complement the academic curriculum, 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 Management Practicum course. 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.

Opportunities for students to take part in ongoing research exist through two Universitywide research units based on the Irvine campus. Through the Center for Research on Information Technology and Organizations (CRITO), a student may participate in research on significant public policy issues. CRITO 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.

### **M.B.A. Career Services**

The M.B.A. Career Services 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 Career Services Office and students.

### **EXECUTIVE M.B.A. PROGRAM**

The Executive M.B.A. (EMBA) Program presents a challenging 21-month course of study specifically designed for working professionals and managers with a minimum of eight years of work experience. Students meet on alternate Fridays and Saturdays at the Graduate School of Management. Class size allows students the opportunity to actively participate in class discussions and interact closely with their peers. Information technology is an integral part of the program and notebook computers are provided for instruction in GSM electronic classrooms.

The program offers an applications-oriented curriculum with an international focus designed to give the working professional contemporary management tools for successfully doing business on a national and international level. Students participate in an in-depth, week-long international seminar abroad. The added dimension of overseas study provides them with first-hand knowledge of the challenges inherent in doing business on a global scale, and brings them in direct contact with global markets.

Further information may be obtained by contacting the Director, Executive M.B.A. Program, 202 Graduate School of Management, University of California, Irvine, CA 92697-3125; telephone (714) 824-5374; World Wide Web: <http://www.gsm.uci.edu/>.

### **HEALTH CARE EXECUTIVE M.B.A. PROGRAM**

The Health Care Executive M.B.A. Program is a two-year program designed for professionals and managers with extensive experience in the health care industry. Classes are held once a month on a Thursday evening beginning at 5 p.m. and continuing until noon on Sunday. During these sessions, program faculty and students stay in a residential facility located close to the UCI campus. In addition, there are three short residential courses which address specific issues and topics while developing team-building skills.

The curriculum is a carefully structured program that assures each student exposure to the full range of disciplines which are essential components of a management education. The core and elective courses are specifically customized for application to a health care professional's daily challenges. Distinguished speakers from the industry are an integral part of the program. Notebook computers and all course-specific software are provided for instructional purposes.

Further information may be obtained by contacting the Director of the Health Care Executive M.B.A. Program, 202 Graduate School of Management, University of California, Irvine, CA 92697-3125; telephone (714) 824-5374; World Wide Web: <http://www.gsm.uci.edu/>.

### **FULLY EMPLOYED M.B.A. PROGRAM**

The Fully Employed M.B.A. (FEMBA) 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. An international requirement is included.

In addition to classroom work, students attend three residential sessions including one abroad focusing on global markets. In this concentrated setting, students and faculty have an opportunity to explore in depth a variety of business challenges and how those challenges can best be met using contemporary management tools. Notebook computers are provided as instructional materials.

Further information may be obtained by contacting the Fully Employed M.B.A. Program, Graduate School of Management, University of California, Irvine, CA 92697-3125; telephone (714) 824-5374; World Wide Web: <http://www.gsm.uci.edu/>.

## 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. Applications are accepted on a quarterly basis. Interested students are encouraged to obtain further information from the GSM Student Affairs Office, 220 Graduate School of Management; telephone (714) 824-4950; e-mail: [dcpatric@uci.edu](mailto:dcpatric@uci.edu); World Wide Web: <http://www.gsm.uci.edu/>.

### 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.

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.

With GSM faculty approval, a student may substitute a maximum of one course.

## Courses in Management UNDERGRADUATE

**5 Managing in Contemporary Organizations (4) F, W, S, Summer.** Equips students with working knowledge of several major subject areas within the context of business and society studies. Topics include: role of management in organizations, corporate social responsibility and responsiveness, ethics and values in business, government regulation, and international business.

**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 noncontrollable 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.

**190 Special Topics in Management (4).** Special topics courses are offered from time to time, but not on a regular basis. Prerequisites vary. May be repeated for credit as topics vary.

**198A-B-C Administrative Internship (4-4-4).** Selected undergraduates participate as interns in three-quarter seminar. Students serve as managers within administrative units on campus with course work complementing the intern experience. Topics include: management ethics, study of non- and for-profit institutions, and changing nature of the work force.

**199 Independent Study (1 to 4).** Individual study under the direction of a selected faculty member. Prerequisite: consent of instructor. May be repeated for credit.

## FULL-TIME M.B.A. PROGRAM

**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).** Methods of statistical inference, emphasizing applications to administrative and management decision problems. Topics: classical estimation and hypothesis testing, regression, correlation, analysis of variance, decision analysis, and forecasting. Prerequisite: basic statistics with probability.



**201B Management Science (4).** Introduction to management science tools for aiding managerial decision making with emphasis on model applicability, formulation, and interpretation. Use of computer laboratory's management science software packages. Topics: mathematical programming, stochastic processes, queueing systems, simulation. Prerequisite: basic course in calculus and algebra. 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 Technology for Management (4).** Focuses on the links between business strategy and information technology, the organizational implications of the technology, and how to successfully incorporate information technology into organizations.

**208 Operations Management (4).** Introduction to strategic and tactical issues in production and operations management. A blend of quantitative and qualitative considerations. Topics: product planning, process design, capacity management, production planning, inventory control, distribution management, just-in-time manufacturing, quality management. Prerequisites: Management 201A and 201B.

**209A Managerial Finance (4).** Analysis of main decision areas of financial management. Topics include present value, capital budgeting, risk and return, cost of capital, capital structure, and mergers. Prerequisites: Management 201A, 203A, 204A. Formerly Management 209A and 209B.

**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. Prerequisites: Management 205, 208, 209A.

## ELECTIVES

**209B Investments (4).** Foundations of investment management. Utility theory, asset pricing theory, factor models, performance assessment, option pricing theory, and mergers. Prerequisite: Management 209A. Formerly Management 243.

**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.

**228 International Management (4).** Examines managerial behavior within a cross-cultural framework. The primary emphasis concerns developing a better understanding of the interrelationship between culture and management in companies around the world. Takes a comparative perspective, looking for similarities and differences across countries. Formerly offered as Management 290.

**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.

**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.

**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 Applied Corporate Finance (4).** Topics include: working capital management, ratios analysis, long-term financing and cost of capital, lease financing, and corporate acquisitions. Prerequisites: Management 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 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 overviews. Examples include economic and environmental regulation. Formerly Management 286. Same as Social Ecology U254.

**261 Privatization (4).** Focuses on the transfer of government functions to the private sector. Special attention is given to the philosophical, social, economic, and political implications of privatization for public and private sector managers and the consumers of "public" goods and services.

**262 Managing Nonprofit Organizations (4).** Designed for students interested in the management of nonprofit organizations. Examines similarities and differences between for-profit and nonprofit organizations, major management issues specifically associated with nonprofits, and exposes students to career opportunities in the nonprofit sector.

**263 Managing Cultural Diversity (4).** Provides students with an opportunity to examine their own feelings, attitudes, and behavior about people who are different from them, and how these feelings could affect their ability to manage effectively in an increasingly diverse work environment.

**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 Information Technology, Management, and Organizations (4).** Addresses issues arising from the use of information technology in organizations: technological trends and basic economic theory, how information technology transforms firms, role of information technology in determining market structure and firm boundaries, new types of organizational forms, i.e., "networked corporation." Prerequisite: Management 207.

**280 Forecasting (4).** Basic theory and techniques used to forecast future activities in technological, economic, social, and political arenas. Impact of forecasting on managerial decision making. Prerequisite: Management 201A.

**281 Mathematical Programming (4).** Formulation, solution, and analysis of linear and nonlinear programming models and network flow models. Applications of these models to analyze complex manufacturing and service systems are included. Software packages and modeling languages such as AMPL are introduced.

**282 Stochastic Models (4).** Introduction to stochastic modeling, with orientation toward applications of stochastic models to analyze systems under uncertainty. Topics include inventory, queueing, reliability, sequential decision processes, dynamic programming. Prerequisite: Management 201A recommended.

**283 Decision Analysis (4).** Models of preferences and uncertainty; exercises in creative problem solving. The assessment and use of preference models and subjective probabilities for private, public, and not-for-profit decision making.

**284 Simulation (4).** Applications of computer models to mimic the behavior of stochastic systems in manufacturing and service industries. Topics include principles and design of simulations, statistical analysis of the output of simulations. Simulation languages and software packages are introduced. Prerequisite: Management 201A.

**285 Production and Inventory Management (4).** In-depth analysis of production planning and inventory management. Use of mathematical models to develop support systems to manage production and inventory decisions. Topics include facilities design, aggregate production planning, inventory control, operations scheduling, logistics management. Prerequisite: Management 201B.

**286 Quality Management (4).** A systematic approach to the understanding of the strategic importance of effective quality management. Concepts behind the quality control and assurance methods and total quality management are addressed. Prerequisite: Management 201A.

**287 Project Management (4).** Examines the fundamental components of project management and its role in the modern corporation. Emphasis is on how to initiate, implement, control, and terminate a project. Use of computer package for project management.

**288 Advanced Topics in Operations Management (4).** Delves more deeply into topics that are currently influencing advances in practice of operations management in both manufacturing and service industries. Topics include modeling and analysis of manufacturing systems, yield management, and workforce scheduling. Appropriate applications in Southern California included. Prerequisite: consent of instructor.

**289 Field Studies in Operations Management (4).** Participation in a small group project sponsored by local companies in Southern California. Involves the applications of various concepts taught in operations management and related areas to address real issues faced by the sponsoring companies. Prerequisite: consent of instructor.

**290 Special Topic Seminars (4) F, W, S.** Seminar, three hours. Each quarter a number of special topic seminars are offered in the 290 series. These seminars are not sequential and may be repeated for credit providing the topic varies. Examples of possible topics include Communication in Organizations, Power and Authority in Organizations, Health Care Administration, Real Estate Development. May be repeated for credit as topics vary.

**291 Legal Environment of Business (4).** Nature, historical background, and practical operation of the American legal system and its impact on policy making and administration in large organizations. Constitutional and political relationships which define and limit operation of systems. Formerly Management 280.

**292 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. Prerequisite: Management 291. Formerly Management 281.

**293 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. Formerly Management 282.

**297A Doctoral Proseminar (0).** 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 Doctoral Seminar in Research Methods (4).** Provides foundation in research design and methodology. Topics include statistical analysis, philosophy of science, and experimental design. Prerequisites: Management 297A-B-C.

**297F Research Design Practicum (4).** Focuses on the development and design of empirical-based studies. Critical analysis and review of student-generated designs of research investigations. Prerequisite: Management 297E.

**297G University Teaching (4).** Designed to prepare students for teaching career; incorporates seminars addressing topics of classroom dynamics, syllabus preparation, teaching techniques; establishes mentor relationship with faculty member in student's teaching area, provides classroom experience and includes option of videotape analysis of teaching style.

**298 Consulting Practicum (4).** Provides students with an opportunity to put into practice concepts, skills, and tools acquired in other parts of the GSM program. Seminar sessions augment internship experiences with analyses of relevant administrative issues. Satisfactory/Unsatisfactory only. Open only to second-year M.B.A. students.

**299 Individual Directed Study (4).** Individual study under the direction of a selected faculty member. Prerequisite: determined by instructor. Same as Management FE299.

## EXECUTIVE M.B.A. PROGRAM

Admission to the Executive M.B.A. Program is a prerequisite for enrollment in the following courses.

**EP200 Management of Complex Organizations (7).** Introduction to the process of managing. Helps students acquire a more global understanding of the managerial task and become acquainted with the tasks and attitudes which are important characteristics of the profession. Designed also to reorient students to the academic environment. Satisfactory/Unsatisfactory only.

**EP201A Statistics for Management (5).** Methods of statistical inference, emphasizing applications to administrative and management decision problems. Topics: classical estimation and hypothesis testing, regression, correlation, analysis of variance, decision analysis, and forecasting.

**EP201B Management Science/Operations Research (5).** Introduction to management science tools for aiding managerial decision making with emphasis on model applicability, formulation, and interpretation. Use of computer laboratory's management science software packages. Topics: mathematical programming, stochastic processes, queueing systems, simulation.

**EP202 Organizational Behavior for Management (5).** 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.

**EP203A Financial Accounting for Management (2.5).** Nature and purpose of accounting, principal accounting instruments, and valuation problems.

**EP203B Managerial Accounting for Management (5).** 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.

**EP204A Microeconomics for Management (5).** Economic analysis of individual decision units. Topics include introduction to demand and supply curves, production functions, cost curves, equilibrium of the firm, perfect competition, monopoly, imperfect competition, demand and supply of inputs.

**EP204B Macroeconomics for Management (2.5).** 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.

**EP205 Principles of Marketing for Management (5).** Introduction to the field of marketing. Objectives include developing familiarity with terms, techniques, and institutions in marketing environments, acquainting students with the type of decisions made by marketing managers, and the factors influencing these decisions.

**EP206 Government and Public Policy (5).** Political analysis as related to management of organizations. Topics include political environment of management, concepts, and processes central to political analysis, bureaucratic politics, politics, and the manager.

**EP207 Information and Computer Systems for Management (5).** Investigates the role of information technologies in organizations, focusing on the relationships between these technologies and organization strategy and structure, and the resulting implications for organizational effectiveness.

**EP209A Corporate Finance I (2.5).** 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 take-overs.

**EP209B Corporate Finance II (5).** Presents the basic paradigm of modern finance. Topics include portfolio theory, CAPM, arbitrage pricing theory, option pricing, and complex securities.

**EP210 Business Strategy (5).** 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.

**EP2290A-H Special Topics (2 to 5).** May be repeated for credit as topic varies.

**EP295 Global Business (8).** Emphasizes and reinforces international perspectives contained in the Executive M.B.A. program curriculum by providing a week-long intensive seminar abroad in the second year. Scholars and business people from the host country instruct students in specially designed class sessions and company visits. Satisfactory/Unsatisfactory only.

**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. Satisfactory/Unsatisfactory only.

**EP299 Individual Study (1 to 8).** Individual study under the direction of a selected faculty member. May be repeated for credit as topics vary.

## HEALTH CARE EXECUTIVE M.B.A. PROGRAM

Admission to the Health Care Executive M.B.A. Program is a prerequisite for enrollment in the following courses.

**HC200 Management of Complex Organizations (7).** Introduction to the process of managing in health care organizations. Helps students acquire a more global understanding of the managerial task and become acquainted with the tasks and attitudes which are important characteristics of the profession. Designed also to reorient students to the academic environment. Satisfactory/Unsatisfactory only.

**HC201A Statistics for Management (5).** Methods of statistical inference, emphasizing applications to administrative and management health care decision problems. Topics: classical estimation and hypothesis testing, regression, correlation, analysis of variance, decision analysis, and forecasting.

**HC201B Management Science/Operations Management (5).** Introduction to management science tools for aiding health care managerial decision making, with emphasis on model applicability, formulation, and interpretation. Use of computer laboratory's management science software packages. Topics: mathematical programming, stochastic processes, queueing systems, simulation.

**HC202 Organizational Behavior for Management (5).** Focuses on human behavior in health care 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.

**HC203A Financial Accounting for Management (2.5).** Nature and purpose of accounting, principal accounting instruments, and valuation problems as they apply to health care organizations.

**HC203B Managerial Accounting for Management (5).** Focuses on the needs of the manager rather than the needs of stockholders and others in a health care organization. Introduces the concepts and tools of internal reporting. Emphasis on use of internal accounting reports and analyses for decision-making.

**HC204A Microeconomics for Management (5).** Economic analysis of individual decision units in health care organizations. Topics include introduction to demand and supply curves, production functions, cost curves, equilibrium of the firm, perfect competition, monopoly, imperfect competition, demand and supply of inputs.

**HC204B Macroeconomics for Management (2.5).** 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 as they relate to health care organizations.

**HC205 Principles of Marketing for Management (5).** Introduction to the field of health care marketing. Objectives include developing familiarity with terms, techniques, and institutions in marketing environments, acquainting students with the type of decisions made by marketing managers, and the factors influencing these decisions.

**HC206 Government and Public Policy (7).** Political analysis as related to management of health care organizations. Topics include political environment of management, concepts, and processes central to political analysis, bureaucratic politics, politics, and the manager.

**HC207 Information and Computer Systems for Management (5).** Investigates the role of information technologies in health care organizations, focusing on the relationships between these technologies and organization strategy and structure, and the resulting implications for organizational effectiveness.

**HC209A Corporate Finance I (5).** Analysis of main decision areas of financial management in health care organizations. 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.

**HC209B Corporate Finance II (2.5).** Presents the basic paradigm of modern finance for health care organizations. Topics include portfolio theory, CAPM, arbitrage pricing theory, option pricing, and complex securities.

**HC210 Business Strategy (5).** Primarily a lecture-case (implemented through discussion) course. Focuses upon the decision-making processes of health care managers. Draws upon a wide variety of fields: marketing, finance, production, personnel, organization.

**HC290 Special Topics (2 to 5).** May be repeated for credit as topic varies.

**HC296 Executive Leadership (7).** Focuses on the conceptual, practical, and personal dimensions of executive leadership in health care. Past and current leadership theories are addressed. Individual personal assessment and diagnosis.

**HC299 Individual Study (1 to 8).** Individual study under the direction of a selected faculty member. May be repeated for credit as topics vary.

### FULLY EMPLOYED M.B.A. PROGRAM

Admission to the Fully Employed M.B.A. Program is a prerequisite for enrollment in the following courses.

**FE200 Management of Complex Organizations (6).** Introduction to the process of managing. Helps students acquire a more global understanding of the managerial task and become acquainted with the tasks and attitudes which are important characteristics of the profession. Designed also to reorient students to the academic environment. Satisfactory/Unsatisfactory only.

**FE201A Statistics for Management (4).** Methods of statistical inference, emphasizing applications to administrative and management decision problems. Topics: classical estimation and hypothesis testing, regression, correlation, analysis of variance, decision analysis, and forecasting.

**FE201B Management Science for Management (4).** Introduction to management science tools for aiding managerial decision making with emphasis on model applicability, formulation, and interpretation. Use of computer laboratory's management science software packages. Topics: mathematical programming, stochastic processes, queueing systems, simulation.

**FE202 Organizational Behavior 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.

**FE203A Financial Accounting for Management (4).** Nature and purpose of accounting, principal accounting instruments, and valuation problems.

**FE203B 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.

**FE204A Microeconomics for Management (4).** Economic analysis of individual decision units. Topics include introduction to demand and supply curves, production functions, cost curves, equilibrium of the firm, perfect competition, monopoly, imperfect competition, demand and supply of inputs.

**FE204B 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.

**FE205A Principles of Marketing for Management (4).** Introduction to the field of marketing. Objectives include developing familiarity with term, techniques, and institutions in marketing environments, acquainting students with the type of decisions made by marketing managers, and the factors influencing these decisions.

**FE205B Marketing II (4).** Examines the means to achieving effective services marketing through a strong service concept delivered well, a desired service performed excellently. Considers private, public, and not-for-profit service organizations, as well as the service components of manufacturers' offerings.

**FE206 Government and Public Policy (4).** Political analysis as related to management of organizations. Topics include political environment of management, concepts, and processes central to political analysis, bureaucratic politics, politics, and the manager.

**FE207 Information and Computer Systems for Management (4).** Investigates the role of information technologies in organizations, focusing on the relationships between these technologies and organization strategy and structure, and the resulting implications for organizational effectiveness.

**FE208 Operations Management (4).** Introduction to strategic and tactical issues in production and operations management. A blend of quantitative and qualitative considerations. Topics: product planning, process design, capacity management, production planning, inventory control, distribution management, just-in-time manufacturing, quality management.

**FE209A Corporate 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 take-overs.

**FE209B Corporate Finance II (4).** Presents the basic paradigm of modern finance. Topics include portfolio theory, CAPM, arbitrage pricing theory, option pricing, and complex securities.

**FE210 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.

**FE290A-H Special Topics (2 to 5).** May be repeated for credit as topic varies.

**FE295 Global Business (8).** Emphasizes and reinforces international perspectives contained in the FEMBA curriculum by providing a week-long intensive seminar abroad in the second year. Scholars and business people from the host country instruct FEMBA students in specially designed class sessions and company visits. Satisfactory/Unsatisfactory only.

**FE296 Executive Leadership (6).** Focuses on the conceptual, practical, and personal dimensions of executive leadership. Past and current leadership theories are addressed. Individual personal assessment and diagnosis. Satisfactory/Unsatisfactory only.

**FE299 Individual Directed Study (1 to 8).** Individual study under the direction of a selected faculty member.

# SCHOOL OF PHYSICAL SCIENCES

Ralph J. Cicerone, **Dean**

180 Physical Sciences I

Academic Counseling: (714) 824-6507

World Wide Web: <http://www.physsci.uci.edu/>

The School of Physical Sciences offers both professional training and general education in the Departments of Chemistry, Earth System Science, Mathematics, and Physics and Astronomy. The faculty, active in research and graduate education, are at the same time vitally concerned with undergraduate teaching. Curricula of the School are designed to meet the needs of a wide variety of students ranging from those with little technical background who seek insight into the activities and accomplishments of physical scientists to those seeking a comprehensive understanding that will prepare them for creative research in physical science.

Over the course of the past century and a half, physics, chemistry, and mathematics have evolved into interdependent but separate intellectual disciplines. This development is reflected in the departmental structure of the School of Physical Sciences. In the same period, these fundamental disciplines have moved into domains of abstraction unimagined by early scientists. This trend to abstraction with its concomitant increase in understanding of the physical universe provides the major challenge to the student of the physical sciences. Mathematics, physics, and chemistry, while providing the foundation of the technology that dominates contemporary civilization, underlie to an ever-increasing extent the new developments in the biological and social sciences. Earth system science is grounded in the traditional physical sciences while breaking new paths in the quantitative study of changes in the global environment.

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.
Earth System Science .....	M.S., Ph.D.
Mathematics .....	B.S., M.S., Ph.D.
Physics .....	B.S., M.S., Ph.D.

## Honors

Criteria used by the School of Physical Sciences in selecting candidates for honors at graduation are as follows: Approximately 1 percent will be awarded *summa cum laude*, 3 percent *magna cum laude*, and 8 percent *cum laude*. Honors are awarded on the basis of a student's performance in research, cumulative grade point average, and performance in upper-division courses in the major. A general criterion is that students must have completed at least 72 units in residence at a University of California campus. Other important factors are considered (see page 55). The School of Physical Sciences also grants special honors to students who have distinguished themselves by their work in their major subject.

## Undergraduate Programs

Each department offers courses that are of value to nonmajors and majors in the sciences. The programs for majors are designed to meet the needs of students planning careers in business 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 E10, Engineering ECE11, or Physics 9.

## 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 and Life Planning 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 and Life Planning Center section for additional information.

## SPECIAL PROGRAMS

### Education Abroad Program

Upper-division students have the opportunity to experience a different culture while making progress toward degree objectives through the Education Abroad Program (EAP). EAP is an overseas study program which operates in cooperation with host universities

and colleges throughout the world. See the Center for International Education section for additional information.

### 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.

### Interdisciplinary Minors

These interdisciplinary minors are available to all UCI undergraduates. A brief description follows; detailed information is included in the Interdisciplinary Studies section of the *Catalogue*.

**The minor in Global Peace and Conflict Studies** is an interdisciplinary curriculum which addresses the problem of international violence; the threat of global war; and paths to world-wide cooperation in building a secure, prosperous, and democratic future.

**The minor in Global Sustainability** trains students to understand the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on this planet.

## REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57-61.

**School Requirements:** None.

**Departmental Requirements:** Refer to individual departments.

## 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, Earth System Science, Mathematics, and Physics and Astronomy.

## DEPARTMENT OF CHEMISTRY

518 Physical Sciences I; (714) 824-6018

John C. Hemminger, **Department Chair**

### Faculty

V. Ara Apkarian, Ph.D. Northwestern University, *Professor of Chemistry* (chemical physics)  
 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, *Vice Chair of the Department and Professor of Chemistry* (organic synthesis and bioorganic chemistry)  
 Ralph J. Cicerone, Ph.D. University of Illinois, *Dean of the School of Physical Sciences, Professor of Earth System Science and Chemistry, and Daniel G. Aldrich Jr. Chair* (atmospheric chemistry)  
 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, *Professor of Chemistry* (synthetic inorganic and organometallic chemistry)  
 Patrick Farmer, Ph.D. Texas A & M University, *Assistant Professor of Chemistry* (inorganic chemistry)  
 Frank J. Feher, Ph.D. University of Rochester, *Vice Chair of the Department and Professor of Chemistry* (organometallic and inorganic chemistry)  
 Barbara J. Finlayson-Pitts, Ph.D. University of California, Riverside, *Professor of Chemistry* (atmospheric and physical 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)  
 Christopher Grayce, Ph.D. James Franck Institute, University of Chicago, *Assistant Professor of Chemistry* (theoretical chemistry)  
 Vincent P. Guinn, Ph.D. Harvard University, *Professor Emeritus of Chemistry*

Warren J. Hehre, Ph.D. Carnegie-Mellon University, *Professor of Chemistry* (theoretical chemistry)  
 John C. Hemminger, Ph.D. Harvard University, *Department Chair and Professor of Chemistry* (surface chemistry and physics)  
 Bo Hong, Ph.D. Texas A & M University, *Assistant Professor of Chemistry* (inorganic chemistry)  
 Kenneth C. Janda, Ph.D. Harvard University, *Professor of Chemistry* (chemical physics and spectroscopy)  
 Jhong K. Kim, Ph.D. University of California, Santa Cruz, *Lecturer in Chemistry* (organic chemistry)  
 Craig C. Martens, Ph.D. Cornell University, *Associate 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 Emeritus in Chemistry and Reactor Supervisor* (radioanalytical chemistry and chemical education)  
 Harold W. Moore, Ph.D. University of Illinois, *Professor Emeritus of Chemistry* (organic chemistry and rational drug design)  
 James S. Nowick, Ph.D. Massachusetts Institute of Technology, *Assistant Professor of Chemistry* (organic and bioorganic chemistry)  
 Larry E. Overman, Ph.D. University of Wisconsin, *Distinguished 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 UC Presidential Chair* (physical chemistry and picosecond spectroscopy)  
 Patricia J. Rogers, Ph.D. University of California, Irvine, *Lecturer in Chemistry* (chemical kinetics)  
 F. Sherwood Rowland, Ph.D. University of Chicago, *Research Professor of Chemistry and Earth System Science, and Bren Chair* (atmospheric chemistry and radiochemistry)  
 Scott D. Rychnovsky, Ph.D. Columbia University, *Professor of Chemistry* (organic chemistry)  
 A. J. Shaka, Ph.D. Oxford University, *Associate 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, *Senior Lecturer Emerita in Chemistry* (physical organic chemistry and chemical education)  
 Darin W. Toohey, Ph.D. Harvard University, *Assistant Professor of Earth System Science and Chemistry* (physical and atmospheric chemistry)  
 David L. Van Vranken, Ph.D. Stanford University, *Assistant Professor of Chemistry* (organic chemistry)  
 Keith A. Woerpel, Ph.D. Harvard University, *Assistant Professor of Chemistry* (organic and organometallic chemistry)  
 Max Wolfsberg, Ph.D. Washington University, *Professor Emeritus 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.

In order to enroll in Chemistry 1A, students must pass the Chemistry Placement Examination, which is given in late spring, summer, and during Orientation Week prior to the beginning of fall quarter. A preparatory course, Chemistry 1P, is offered in summer and fall for those who do not pass the Chemistry Placement Examination or who need additional preparation prior to entering Chemistry 1A. A grade of C or better in Chemistry 1P automatically qualifies the student for Chemistry 1A.



Completion of a one-year sequence in organic chemistry, either Chemistry 51A-B-C or 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. A handout describing the procedures for arranging an undergraduate research opportunity is available from the Chemistry Undergraduate Affairs Office, 248/250 Physical Sciences I.

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 are urged to contact the UCI Department of 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.

### Admission to the Major

Students may be admitted to the Chemistry major upon entering the University as freshmen, via change of major, and as transfer students from other colleges and universities. Information about change of major policies is available in the Physical Sciences Student Affairs Office. For transfer student admission, preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of general chemistry with laboratory and one year of approved calculus.

## REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57–61.

**School Requirements:** None.

### Departmental Requirements

**Basic Requirements:** Mathematics 2A-B-C, Physics 5A-B-C (or Physics H6A-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/H180 may be counted no more than once, and Chemistry 139, 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 120, 121, 122, 123.

**Elective List:** Chemistry 125, 127, 135, 136, 137, and all Chemistry courses numbered 152–249; Biological Sciences 98 (Biochemistry), 99 (Molecular Biology); Earth System Science 101A-B (Earth Systems I-II); Physics 111A-B (Classical Mechanics), 112A-B (Electromagnetic Theory), 113A-B-C (Quantum Physics), 115 (Statistical Physics), 116 (Thermodynamics), 120 (Electronics for Scientists), 121–123 (Advanced Laboratory I, II, III), 132 (Nuclear Physics), 133 (Condensed Matter Physics), 134 (Modern

Optics); Engineering ChE120A (Momentum Transfer), ChE120LA (Chemical Engineering Laboratory I), ChE120B (Heat and Mass Transfer), ChE120LB (Chemical Engineering Laboratory II), ChE122 (Separation Processes), ChE160 (Reaction Kinetics and Reactor Design), ChE162 (Chemical Engineering Design), ChE163 (Chemical Process Control), ChE165 (Introduction to Biochemical Engineering), CE164 (Chemistry for Environmental Engineering), CE165 (Physical-Chemical Processes), CE166 (Microbial Processes), ME105 (Materials Engineering Laboratory).

**Scientific Breadth Requirements:** A total of six additional four- or five-unit courses chosen from the offerings of the Departments of Earth System Science, Mathematics, Physics and Astronomy, and Information and Computer Science, and the Schools of Biological Sciences and Engineering, excluding the following: Earth System Science 20E-F, Mathematics H90A, Physics 1, Physics 3A-B-C, Physics H90A, and courses which are designed primarily for upper-division writing or tutoring credit. No more than two quarters of the requirement may be met with independent study or research courses. (These may be taken on a Pass/Not Pass basis subject to the usual restrictions on Pass/Not Pass enrollment.)

## HONORS PROGRAM IN CHEMISTRY

The Honors Program in Chemistry is a research-based program offered to selected Chemistry majors during their final year. Applicants to the program must have completed their junior year with a grade point average of at least 3.3 overall and in their Chemistry courses. They must also have demonstrated the potential of carrying out research of honors quality, as judged by the Chemistry faculty member who will supervise their research. Students in this program enroll in Honors Research in Chemistry (Chemistry H180A-B-C) throughout their senior year and submit a formal thesis late in the spring quarter. They also enroll in the Honors Seminar in Chemistry (Chemistry H181), in which they receive instruction in scientific writing and present a formal research seminar. Successful completion of Chemistry H181 satisfies the UCI upper-division writing requirement.

Students who complete these requirements, whose grade point average remains above the 3.3 standard, and whose research is judged to be of honors quality will graduate with Departmental Honors in Chemistry.

The Department also offers an Honors General Chemistry series, H2A-B-C. This course in general chemistry is designed for members of the Campuswide Honors Program (CHP) and other highly qualified students. It covers the same material as Chemistry 1A-B-C, but in greater depth.

Additional information is available from the Chemistry Undergraduate Affairs Office.

## PLANNING A PROGRAM OF STUDY

The departmental requirements leave the student a great deal of latitude in choice of courses; the student can choose to pursue interests ranging from biochemistry on the one hand to chemical physics on the other. Many of the basic requirements above coincide with those of the School of Biological Sciences. For this reason a double major in Chemistry and Biological Sciences is popular 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-F, 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 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. Because of these significant differences in course content, students starting in one series may not switch to the other in subsequent quarters.

During the junior and senior years the Chemistry Department electives requirement should be fulfilled, as should other University and departmental requirements.

Sample programs for Chemistry majors, American Chemical Society-certified Chemistry majors, and Chemistry-Biological Sciences double majors are shown in the accompanying charts. Sample programs for Chemistry majors wishing to emphasize chemical physics, computational or theoretical chemistry, chemical synthesis and reactivity, materials or polymer science, or public school science teaching in their undergraduate programs are available from the Chemistry Undergraduate Affairs Office, 248/250 Physical Sciences I.

#### Sample Program — Chemistry Majors\*

Items in parentheses are recommended choices or alternatives.

FALL	WINTER	SPRING
<b>Freshman</b>		
Chemistry 1A	Chemistry 1B, 1LB	Chemistry 1C, 1LC
Mathematics 2A	Mathematics 2B	Mathematics 2C
Breadth (Writing)	Breadth (Writing)	Breadth/Elective
Breadth	Breadth	Breadth
<b>Sophomore</b>		
Chem. 52A, 52LA (51A, 51LA)	Chem. 52B, 52LB (51B, 51LB)	Chem. 52C, 52LC (51C, 51LC)
Elective	Physics 5A	Physics 5B, 5LB
Breadth	Breadth	Breadth
Science Breadth (Math)	Science Breadth (Math)	Science Breadth (Math)
<b>Junior</b>		
Chem. 131A (130A)	Chem. 131B (130B)	Chem. 131C (130C)
Chemistry 151	Chemistry 107	Chemistry 107L
Physics 5C, 5LC	Chemistry Elective	Chemistry Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective
<b>Senior</b>		
Chemistry Elective Breadth (Writing)	Chemistry Elective Breadth	Chemistry Elective Breadth
Science Breadth Elective	Science Breadth Elective	Science Breadth Elective

\* For American Chemical Society certification include two courses selected from Mathematics 2D-2F, 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.

FALL	WINTER	SPRING
<b>Freshman</b>		
Chemistry 1A	Chemistry 1B, 1LB	Chemistry 1C, 1LB
Mathematics 2A	Mathematics 2B	Mathematics 2C
Bio. Sci. 94	Breadth/Elective	Bio. Sci. 96
Breadth (writing)	Breadth (writing)	Breadth/Elective
<b>Sophomore</b>		
Chem. 52A, 52LA (51A, 51LA)	Chem. 52B, 52LB (51B, 51LB)	Chem. 52C, 52LC (51C, 51LC)
Bio. Sci. 97	Physics 5A	Physics 5B, 5LB
Breadth/Elective	Bio. Sci. 98	Bio. Sci. 99
Breadth/Elective		
<b>Junior</b>		
Chemistry 151	Chemistry 107	Chemistry 107L
Physics 5C, 5LC	Bio. Sci. Core	Bio. Sci. Core
Bio. Sci. Core	Bio. Sci. 100L	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective
<b>Senior</b>		
Chem. 130A (131A)	Chem. 130B (131B)	Chem. 130C (131C)
Bio. Sci. Satellite or Lab	Chemistry Elective Bio. Sci. Satellite or Lab	Chemistry Elective Bio. Sci. Satellite or Lab
Bio. Sci. Satellite or Lab	Breadth/Elective	Breadth/Elective
Breadth (upper- division writing)		

#### 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. 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.

Progress toward the Ph.D. degree during the first year is assessed by a written examination administered early in the second year of study. This examination covers either research accomplishments during the first year or comprehensive knowledge acquired in course work, depending upon the student's specific area of interest.

Training in teaching is an integral part of each graduate program, and all graduate degree candidates are expected to participate in the teaching program for at least four quarters during their graduate career.

Participants in the Ph.D. program take an oral examination for formal Advancement to Candidacy. This examination normally comes in a student's second or 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.

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.

## CONCENTRATION IN PROTEIN ENGINEERING SCIENCE

Several faculty in the Department of Chemistry, in conjunction with faculty in the School of Biological Sciences and the School of Engineering, participate in the joint graduate program in Protein Engineering. This interdisciplinary graduate program offers students the opportunity to work with faculty in any of the participating academic units; take course work in the areas of protein structure, function, and molecular biology; and earn the Ph.D. in Chemistry, Biological Sciences, or Engineering with a concentration in Protein Engineering Science. Additional information is available in the School of Biological Sciences section of the *Catalogue* and through the graduate program in Protein Engineering office in the Biological Sciences Administration Building.

## MASTER OF SCIENCE IN CHEMISTRY WITH A TEACHING CREDENTIAL

In cooperation with the UCI Department of Education, the Chemistry Department sponsors a coordinated two-year program leading to the M.S. degree in Chemistry and the California Single Subject Teaching Credential. The M.S. degree may be obtained under either Plan I or Plan II described below. Prospective graduate students interested in this program should so indicate on their graduate application and should request a detailed description of the program from the Chemistry Department Graduate Affairs Office or the Department of Education.

The following lists specify requirements for each of the graduate programs offered by the Department of Chemistry.

### MASTER OF SCIENCE IN CHEMISTRY PLAN I (Thesis Plan)

Completion of 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); 1A (F, W, Summer), 1B (W, S), 1C (S, Summer, F).** 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. Corequisite: concurrent enrollment in the corresponding laboratory courses. Prerequisite for Chemistry 1A: high school chemistry and one of the following: a passing score on the UCI Chemistry Placement Examination or a grade of C or better in Chemistry 1P; for Chemistry 1B and 1C, a grade of C- or better in all previous courses in the sequence. Chemistry 1A-B-C and Chemistry H2A-B-C may not both be taken for credit. (II)

NOTE: The Chemistry Placement Examination, which is to be taken prior to enrollment in Chemistry 1A, assesses the student's preparation for General Chemistry. Students enrolled in the W-S-Summer/F sequence of Chemistry 1A-B-C must complete Chemistry 1C in the Summer Session to be eligible to enroll in Chemistry 51A or 52A in the subsequent fall quarter.

**1LA General Chemistry Laboratory for Engineering Majors (1) F, W.** Laboratory, four hours. Training and experience in basic laboratory techniques through experiments related to lecture topics in Chemistry 1A. Prerequisite: concurrent enrollment or successful completion of Chemistry 1A.

NOTE: Chemistry 1LA is open to Engineering majors only. The Chemistry 1LA-LB sequence satisfies all requirements met by Chemistry 1LB-1LC for non-Engineering majors. It is recommended that students complete Chemistry 1LA-1LB and the corresponding Chemistry 1 segment within the same academic year. (II)

**1LB-1LC General Chemistry Laboratory (2-2); 1LB (W, S), 1LC (S, Summer, F).** Laboratory, four hours. Training and experience in basic laboratory techniques through experiments related to lecture topics in Chemistry 1A-B-C. Corequisite for Chemistry 1LB and 1LC: concurrent enrollment in the corresponding segment of Chemistry 1. Prerequisite for Chemistry 1LB: passing grade in Chemistry 1A. Prerequisite for Chemistry 1LC: passing grades in Chemistry 1B and 1LB. (II)

**1P Preparation for General Chemistry (4) F, Summer.** Lecture, three hours; quiz, two hours. Units of measurement, dimensional analysis, significant figures; elementary concepts of volume, mass, force, pressure, energy, density, temperature, heat, work; fundamentals of atomic and molecular structure; the mole concept; stoichiometry; properties of the states of matter; gas laws; solutions, concentrations.

NOTE: Chemistry 1P satisfies no requirements other than contribution to the 180 units required for graduation. Designed for students who need additional help prior to enrollment in General Chemistry.

**H2A-B-C Honors General Chemistry (4-4-4) F, W, S.** Lecture, three hours; discussion, one hour. Covers the same material as Chemistry 1A-B-C but in greater depth. Additional topics included as time permits. Chemistry H2A-B-C satisfies the same requirements and prerequisites as Chemistry 1A-B-C; corresponding segments may not both be taken for credit. Corequisite: concurrent enrollment in the corresponding quarter of Chemistry 1LB or 1LC. Prerequisite for H2A: membership in the Campuswide Honors Program, or a score of 4 or 5 on the Chemistry Advanced Placement Examination, or a score of 700 or better on the SAT II in Chemistry, or a qualifying score on the UCI Chemistry Placement Examination, or consent of instructor. Prerequisite for H2B-H2C: grade of B or better in preceding course in series. (II)

**51A-B-C Organic Chemistry (4-4-4); 51A (F, W, Summer), 51B (W, S, Summer), 51C (S, Summer, F).** Lecture, three hours; discussion, one hour. Fundamental concepts relating to carbon compounds with emphasis on structural theory and the nature of chemical bonding, stereochemistry, reaction mechanisms, and spectroscopic, physical, and chemical properties of the principal classes of carbon compounds. Corequisite for 51A-B: concurrent enrollment in the corresponding segment of Chemistry 51L. Prerequisites for 51A: Chemistry 1A-B-C and 1LB-1LC. Prerequisites for 51B: passing grades in Chemistry 51A and 51LA. Prerequisites for 51C: passing grades in Chemistry 51B and 51LB. Chemistry 51A-B-C and Chemistry 52A-B-C may not both be taken for credit.

NOTE: Priority for enrollment in the Chemistry 51A-B-C sequence offered in W-S-Summer/F is given to students who successfully complete Chemistry 1C in the preceding fall quarter.

**51LA-LB-LC Organic Chemistry Laboratory (2-2-2); 51LA (F, W, Summer), 51LB (W, S, Summer), 51LC (S, F).** Laboratory, four hours. Modern techniques of organic chemistry, using selected experiments to illustrate topics introduced in Chemistry 51A-B-C. Corequisite for 51LA-LB-LC: concurrent enrollment in the corresponding segment of Chemistry 51. Prerequisites for 51LB: 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 (4-4-4) F, W, S.** Lecture, three hours; discussion, one hour. Fundamental concepts of the chemistry of carbon compounds. Structural, physical, and chemical properties of the principal classes of carbon compounds. Corequisite: concurrent enrollment in the corresponding segment of Chemistry 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. Chemistry 51A-B-C and Chemistry 52A-B-C may not both be taken for credit.

**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 Biological Sciences H90A-B-C, 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 Education 114. NOTE: this course satisfies no requirements other than contribution to the 180 units required for graduation.

**125 Advanced Organic Chemistry (4) F.** Lecture, three hours; discussion, one hour. Rapid-paced comprehensive treatment of organic chemistry, reinforcing the fundamental concepts introduced in 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.

NOTE: Chemistry 130A-B-C and 131A-B-C are parallel courses in physical chemistry; both are acceptable to satisfy the physical chemistry requirements for the major. Because of significant differences in course content, students starting in one series may not switch to the other in subsequent quarters.

**130A-B-C Physical and Biophysical Chemistry.** Lecture, three hours; discussion, one hour.

**130A Chemical Thermodynamics (4) F.** 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) W.** 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) S.** 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) F.** 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) W.** Principles of quantum mechanics with application to the elements of atomic structure and energy levels, diatomic molecular spectroscopy and structure determination, and chemical bonding in simple molecules. Prerequisite: Chemistry 131A.

**131C Statistical Mechanics and Chemical Dynamics (4) S.** 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, three hours. Workshop in writing technical reports, journal articles, proposals. Oral presentations. Communicating with the public. May not be used in satisfaction of any School or departmental requirement. Prerequisites: upper-division standing; satisfaction of the lower-division writing requirement. Open to Chemistry majors only. Same as Mathematics 190 and Physics 129.

**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 (5)** W. Lecture, three hours; discussion, one hour; laboratory, seven hours. In-depth treatment of most modern instrumental methods for quantitative analysis of real samples and basic principles of instrument design. Laboratory experiments in the use of electronic test equipment, microprocessor programming; interfacing and use of techniques such as absorption, emission, and luminescence spectrophotometry, polarography, gas and liquid chromatography, magnetic resonance, neutron activation analysis, and mass spectrometry. Prerequisite: Chemistry 151.

**153 Physical Chemistry Laboratory (4)** S. Prelaboratory lecture, three hours; laboratory, nine hours. Laboratory exercises emphasize quantitative characterization of chemical substances and chemical processes. Experiments in chemical thermodynamics, atomic and molecular spectroscopy, chemical kinetics, and various methods of molecular structure determination. Corequisite: Chemistry 130C or 131C. Prerequisites: Chemistry 151 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)** W. Lecture, two hours; discussion, one hour; laboratory, eight hours. Modern experimental techniques in organic synthesis including experience with thin-layer chromatography, liquid chromatography, and gas chromatography. Modern methods of structure elucidation including FT NMR are employed in the characterization of products. Prerequisite: Chemistry 125.

**170 Radioisotope Techniques (4)** 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.

**H180A-B-C Honors Research in Chemistry (4-4-4)** F, W, S. Undergraduate honors research in Chemistry. A student time commitment of 10–15 hours per week is required. Corequisite for H180C: Chemistry H181. Prerequisites: consent of instructor; open to participants in the Chemistry Honors program and to Chemistry majors participating in the Campuswide Honors Program.

**H181 Honors Seminar in Chemistry (2)** S. Students receive guidance in the preparation of oral and written research presentations. A written thesis is prepared and a formal research seminar is presented. Corequisite: Chemistry H180C. Prerequisites: successful completion of Chemistry H180A-B; satisfactory completion of the lower-division writing requirement. Open only to students in the Chemistry Honors Program and Chemistry majors who are participating in the Campuswide Honors Program.

**192 Tutoring in Chemistry (2)** F, W, S. Enrollment limited to participants in the Chemistry Peer Tutoring Program. Prerequisite: consent of instructor. May be taken for a total of 18 units of which the first eight may be taken for a letter grade. The remaining 10 units must be taken Pass/Not Pass only. NOTE: No more than eight units may be counted toward the 180 units required for graduation. Satisfies no degree requirement other than contribution to the 180-unit total.

**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 engage in independent study for credit should arrange with a member of the faculty to sponsor and supervise such work. A student time commitment of three to four hours per week per unit is expected, and a written report on the independent study is required at the end of each quarter of enrollment. Prerequisite: consent of instructor.

## GRADUATE

**201 Organic Reaction Mechanisms I (4).** Lecture, three hours. Advanced treatment of basic mechanistic principles of modern organic chemistry. Topics include molecular orbital theory, orbital symmetry control of organic reactions, aromaticity, carbonium ion chemistry, free radical chemistry, the chemistry of carbenes and carbanions, photochemistry, electrophilic substitutions, aromatic chemistry. Prerequisite: Chemistry 130A-B-C or 131A-B-C or equivalent.

**202 Organic Reaction Mechanisms II (4).** Lecture, three hours. Topics include more in-depth treatment of mechanistic concepts, kinetics, conformational analysis, computational methods, stereoelectronics, and both solution and enzymatic catalysis. Prerequisite: Chemistry 201.

**203 Organic Spectroscopy (4).** Lecture, three hours. 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).** 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).** Lecture, three hours. Fundamentals of modern synthetic organic chemistry will be developed. Major emphasis this quarter is on natural product total synthesis and retrosynthetic (antithetic) analysis. Prerequisite: Chemistry 204.

**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).** 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).** 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  $\pi$ -complexes. Applications to homogenous catalysis and organic synthesis are incorporated throughout the course. Prerequisite: Chemistry 107 or 215.

**217 Physical Inorganic Chemistry (4).** Lecture, three hours. General principles of the spectroscopy and magnetism of inorganic compounds. Characterization of inorganic complexes by infrared, near-infrared, visible, ultraviolet, NMR, EPR, EXAFS, and Mossbauer spectroscopies. Some necessary group theory developed. Prerequisite: Chemistry 215 or consent of instructor.

**218 Metallobiochemistry (4).** Lecture, three hours; discussion, one hour. A review of the biochemistry of metallic elements emphasizing: methods for studying metals in biological systems; the chemical basis for nature's exploitation of specific elements; structures of active sites; mechanisms; solid-state structures and devices; metals in medicine. Prerequisite: Chemistry 130A-B-C or equivalent.

**220 Bioorganic Chemistry (4).** Lecture, three hours; discussion, one hour. Structure and function of biologically important macromolecules. Introduction to nucleic acids, protein structure, principles of molecular recognition, enzyme function, modeling, and engineering. Prerequisite: Chemistry 51A-B-C or 52A-B-C or equivalent.

**222 Natural Products (4) F.** Lecture, three hours; discussion, one hour. Fundamentals of natural products chemistry are surveyed. Topics include classification schemes, biosynthesis, isolation and characterization, drug development from natural products, and chemical synthesis.

**225 Polymer Chemistry (4).** 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.

**230 Classical Mechanics and Electromagnetic Theory (4).** Lecture, three hours; discussion, one hour. The fundamentals of classical mechanics and electromagnetic theory are developed with specific application to molecular systems. Newtonian, Lagrangian, and Hamiltonian mechanics are developed. Boundary value problems in electrostatics are investigated. Multipole expansion and macroscopic media are discussed from a molecular viewpoint. Prerequisite: Chemistry 131A-B-C or equivalent.

**231A-B-C Quantum 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).** Topics and format vary. Prerequisite: Chemistry 213 or consent of the instructor.

**235 Molecular Quantum Mechanics (4) W.** Lecture, three hours; discussion, one hour. Application of quantum mechanics to calculation of molecular properties. Electronic structure of molecules. Prerequisite: Chemistry 231A or equivalent.

**236 Concepts in Solid State Chemistry (4).** Lecture, four hours; discussion, one hour. Concepts in electronic structure and vibrational properties of solids are outlined, and chemical applications discussed. Topics include: energy bands of insulators, metals, semisolids. Thermal properties. Phonon processes.

**241 Current Issues Related to Tropospheric and Stratospheric Processes (4) S.** Examination of current issues related to the atmosphere, including energy usage; toxicology; effects on humans, forest, plants, and ecosystems; particulate matter (PM10); combustion; modeling and meteorology; airborne toxic chemicals and risk assessment; application of science to development of public policies. Prerequisite: Chemistry 245 or Earth System Science 202, or Engineering ME164 or Engineering ME261 or consent of instructor. Same as Engineering ME 260.

**243 Advanced Instrumental Analysis (4) W.** Theory and applications of modern advanced instrumental methods of analysis. Includes data acquisition, storage, retrieval and analysis; Fourier transform methods; vacuum technologies, magnetic sector, quadrupole, and ion trap mass spectrometry; surface science spectroscopic methods; lasers and optics. Prerequisites: Chemistry 152 and Chemistry 130A-B-C or 131A-B-C.

**245 Atmospheric Chemistry of the Natural and Polluted Troposphere (4) F.** Lecture, three hours; discussion, one hour. Kinetics, mechanisms, and photochemistry of tropospheric reactions in the gas, liquid, and solid phases, and methods of analysis. Chemistry of photochemical oxidant formation and acid deposition, and applications to control strategies. Chemistry of toxic chemicals and indoor air pollution. Prerequisites: Chemistry 130A-B-C or 131A-B-C and Chemistry 151 or equivalent.

**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 (1 to 4) F, W, S.** Required of and limited to Teaching Assistants.

## DEPARTMENT OF EARTH SYSTEM SCIENCE

220 Physical Sciences I; (714) 824-8794

Michael Prather, **Chair**

### Faculty

Ralph J. Cicerone, Ph.D. University of Illinois, *Dean of the School of Physical Sciences, Professor of Earth System Science and Chemistry, and Daniel G. Aldrich Jr. Chair* (atmospheric chemistry)

Ellen R.M. Druffel, Ph.D. University of California, San Diego, *Professor of Earth System Science* (geochemistry)

Gudrun Magnusdottir, Ph.D. Colorado State University, *Assistant Professor of Earth System Science* (atmospheric dynamics)

Michael Prather, Ph.D. Yale University, *Department Chair and Professor of Earth System Science* (mathematical modeling of atmospheric chemistry and radiation)

William S. Reece, Ph.D. The Johns Hopkins University, *Professor of Earth System Science* (geochemistry and biogeochemistry)

Darin W. Toohey, Ph.D. Harvard University, *Assistant Professor of Earth System Science and Chemistry* (atmospheric chemistry and reaction kinetics)

Susan E. Trumbore, Ph.D. Columbia University, *Assistant Professor of Earth System Science* (geochemistry and biogeochemistry)

Laurel L. Wilkening, Ph.D. University of California, San Diego, *Chancellor and Professor of Earth System Science* (planetary science)

### Affiliated Faculty

Carl A. Friehe, Ph.D. Stanford University, *Professor of Mechanical and Aerospace Engineering and of Earth System Science* (fluid mechanics, turbulence, micrometeorology, instrumentation)

F. Sherwood Rowland, Ph.D. University of Chicago, *Research Professor of Chemistry and Earth System Science, and Bren Chair* (atmospheric chemistry and radiochemistry)

The goal of the Department of Earth System Science is to increase the scientific understanding of the Earth as a coupled system of atmosphere, ocean, and land. Undergraduate course offerings are designed to educate both science and non-science majors in the physical, chemical, and biological principles underlying global environmental problems. The Department offers graduate programs leading to M.S. and Ph.D. degrees in Earth System Science. Graduate study emphasizes laboratory, field, and modeling studies of global change in the environment from the perspective of physical, chemical, and biological processes occurring in and linkages among the atmosphere, the ocean, and terrestrial systems. Students are admitted to the Ph.D. program only; the Master's degree is awarded upon progress to the Ph.D.

Applicants to the Earth System Science Ph.D. program should have a broad quantitative scientific background, with an undergraduate degree in natural science or related fields such as applied mathematics and engineering. Undergraduate preparation should involve mathematics including differential equations, a year-long sequence of physics and of chemistry, and courses in general biology, ecology, or geology. Entering graduate students plan their courses and research with the help of the Earth System Science Advisory Committee of academic and research faculty.

To complete the course requirements for the Ph.D. program, a minimum of 10 approved graduate-level courses, including the core curriculum, must be completed with an average grade of B or better. All courses must be approved by the student's Advisory Committee. The core curriculum consists of: Earth System Science 201A-B-C (Earth Systems), 202 (The Principles of Atmospheric Chemistry), one quarter of 210 (Geoscience Modeling) or 212 (Atmospheric Dynamics), and at least one quarter of either 231 (Topics in Biogeochemistry) or 233 (Topics in Climate Dynamics). These courses are described below. Students are also expected to participate in the Earth System Science seminar. Additionally, students are required to complete a teaching assistant training program and, if opportunities are available, to serve as a teaching assistant.

Academic Senate regulations specify a minimum period of residence of six quarters for Ph.D. candidates. Enrollment in a minimum of 12 units of graduate/upper-division course work per quarter is required. Registration in every regular academic session is necessary until all requirements for the degree have been completed, unless a formal Leave of Absence is granted by the Office of Graduate Studies. All Ph.D. requirements must be completed within 15 quarters in residence, excluding summer quarters. Exceptions must be put to a vote of the Earth System Science faculty.

A single departmental Qualifying Examination for all eligible Earth System Science students is administered each spring quarter. This examination determines the student's readiness to begin research for the dissertation and should be taken following completion of the core course work, no later than the end of the spring quarter of the second year. The Qualifying Examination consists of both written and oral parts. The written portion of the examination emphasizes breadth, general knowledge, and the ability to integrate and use information covered in the core curriculum and other course work. The oral examination provides an opportunity to clarify questions arising from the student's performance on the written examination.

Following completion of the Qualifying Examination, those students who receive a recommendation to continue Ph.D. work will pursue research on a potential dissertation topic and then take the Advancement to Candidacy Examination. This oral examination is given by a faculty committee, including extra-departmental faculty. Concurrent with this examination, the Ph.D. candidates present a research seminar to the entire Earth System Science Department outlining their proposed dissertation work.

A dissertation based on original research and demonstrating critical judgment, intellectual synthesis, creativity, and clarity in written communication is required for the Ph.D. degree. The dissertation must summarize the results of original research performed by the student under the supervision of a faculty member of the Department. The criterion of acceptability of a dissertation is that its contents be judged by the committee as suitable for publication in a peer-reviewed scientific journal of high editorial standards. The dissertation may be a compilation of published papers or manuscripts accepted for publication, so long as a major proportion of the material has been produced independently by the candidate. The format and content are approved by the Dissertation Committee, and University requirements for style, format, and appearance are met.

The Master's degree is awarded only to students admitted to the Ph.D. program who have completed a total of 10 courses, met the three-quarter residency requirement, and completed the Qualifying Examination.

A summary of the requirements follows.



## DOCTOR OF PHILOSOPHY IN EARTH SYSTEM SCIENCE

1. Completion of course work (10 courses, including core courses)
2. Six quarters in residence at UCI
3. Completion of the teaching and seminar requirements
4. Completion of the Qualifying Examination, with recommendation to continue for the Ph.D.
5. Pass the Advancement to Candidacy Examination
6. Presentation of an open research seminar
7. Submission of an acceptable doctoral dissertation and formal defense

## MASTER OF SCIENCE IN EARTH SYSTEM SCIENCE

1. Completion of course work (10 courses, including core courses)
2. Three quarters in residence at UCI
3. Completion of the teaching and seminar requirements
4. Completion of the Qualifying Examination

## Courses in Earth System Science

### UNDERGRADUATE

Lower-division undergraduate course offerings emphasize an understanding of the basic science involved in global change of the Earth's atmosphere, oceans, and terrestrial biosphere. Any three courses selected from Earth System Science 10, 20E, 20F, and Physics 20A, 20B, 20C, 20D will satisfy the natural sciences breadth requirement (category II). Lower-division Earth System Science courses also are core or elective courses in the Interdisciplinary Minor in Global Sustainability. See the Interdisciplinary Studies section of this *Catalogue* for more information on the minor.

Upper-division courses are particularly appropriate as electives for students majoring in the physical or biological sciences, or engineering, with an interest in applying physics, chemistry, and biology to study the Earth's atmosphere, oceans, biosphere, and climate.

### Lower-Division

**10 The Physical Environment (4) F.** Covers the origin and evolution of the Earth, its atmosphere, and oceans, from the perspective of biogeochemical cycles, energy use, and human impacts on the Earth system. (II)

**20 Science of the Global Environment.** Designed for students not majoring in science or engineering. Basic principles of chemistry and physics that underlie global environmental problems, such as stratospheric ozone depletion and global climate change.

**20E The Global Environment: Atmospheric Pollution (4) W.** Basic structure, chemistry, and circulation of the atmosphere, with focus on causes and consequences of human activities. Topics include regional air pollution, the global ozone layer, and climatic change. (II)

**20F The Global Environment: Climate, Oceans, and Land (4) S.** The role of oceans and terrestrial biosphere in influencing atmospheric chemistry and climate, with discussion of ocean circulation, pollution and climate interaction, and influence of human activities on distribution and function of life on land. Evidence for past climatic change. (II)

### Upper-Division

**101A-B-C Earth Systems (4-4-4) F, W, S.** Introduction to the fundamental processes controlling cycling of the elements C, N, O, H, P, and S on the global scale, focusing on exchanges between atmosphere, ocean and the terrestrial reservoirs, climate interactions, and the influence of human activities. Prerequisites: Mathematics 2A-B-C and Chemistry 1A-B-C. Concurrent with Earth System Science 201A-B-C.

**112 Atmosphere Dynamics (4) S.** A study of geophysical fluids that focuses on atmospheric structure and circulation, generation and propagation of waves. Solution of the equations of momentum, energy, and chemical tracers including boundary layer interface with the ocean biosphere, applications to ocean circulation. Prerequisite: Mathematics 3D. Concurrent with Earth System Science 212.

**190A-B-C Senior Seminar on Global Sustainability I, II, III (2-2-4) F, W, S.** Students attend weekly seminar to discuss current issues in global sustainability. Weekly attendance at Global Sustainability Forum also is required. Seminar utilized to analyze forum presentations and to prepare senior research paper. **A:** Prepare bibliography. **B:** Prepare research proposal. **C:** Prepare/write research paper under the direction of a faculty member. In Progress grading for 190A-B; grade for sequence given upon completion of 190C. Prerequisites: senior standing, Biological Sciences 1D when topic is Biological Conservation, Environmental and Analysis and Design E20, and Earth System Science 10. Same as Biological Sciences 191A-B-C and Social Ecology 186A-B-C.

**199 Undergraduate Research (2 to 4) F, W, S.** For junior and senior undergraduates, preferably with majors in science or engineering. Interested students should arrange with a member of the Earth System Science faculty to supervise and support a research project. A written summary is required at the end of each quarter. Prerequisite: consent of instructor.

### GRADUATE

**201A-B-C Earth Systems (4-4-4) F, W, S.** Introduction to the fundamental processes controlling cycling of the elements C, N, O, H, P, and S on the global scale, focusing on exchanges between atmosphere, ocean and terrestrial reservoirs, climate interactions, and the influence of human activities. Prerequisite: graduate standing. Concurrent with Earth System Science 101A-B-C.

**202 The Principles of Atmospheric Chemistry (4) W.** Overview of major forces controlling the chemical composition of Earth's atmosphere with emphasis on the role of the biosphere and the changes induced by human activities. Topics covered include urban pollution, acid rain, stratospheric ozone depletion, and climate change. Prerequisite: Earth System Science 201A.

**210 Geoscience Modeling (4) F.** The use of numerical calculations to analyze geophysical data or build models, focusing on numerical accuracy, classic foibles, functional fits, ordinary differential equations, time series, eigenvalue analysis, and the formulation of coupled Earth system models.

**212 Atmosphere Dynamics (4) S.** A study of geophysical fluids that focuses on atmospheric structure and circulation, generation and propagation of waves. Solution of the equations of momentum, energy, and chemical tracers including boundary layer interface with the ocean and biosphere, applications to ocean circulation. Concurrent with Earth System Science 112.

**231A-B-C Topics in Biogeochemistry (4-4-4).** Each quarter is devoted to in-depth analysis of a subarea in biogeochemistry which is undergoing rapid development. May be repeated for credit as topics vary.

**233A-B-C Topics in Climate Dynamics (4-4-4).** Each quarter is devoted to in-depth analysis of an important and rapidly developing area in the field of climate dynamics. May be repeated for credit as topics vary.

**280 Research (2 to 12) F, W, S.** Supervised original research in areas of Earth System Science. Prerequisite: consent of instructor. May be repeated for credit.

**290 Seminar (1) F, W, S.** Weekly seminars and discussions on topics of general and current interest in Earth System Science. Satisfactory/Unsatisfactory only. Prerequisite: graduate standing. May be repeated for credit as topics vary.

**291 Research Seminar (1 to 4) F, W, S.** Detailed discussions of ongoing research in Earth System Science. Format, content, and frequency of the course are variable. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

## DEPARTMENT OF MATHEMATICS

420 Physical Sciences I; (714) 824-5503

Peter Li, **Department Chair**

### Faculty

Takeo Akasaki, Ph.D. University of California, Los Angeles, *Professor Emeritus of Mathematics* (ring theory)

Bruce M. Bennett, Ph.D. Columbia University, *Professor of Mathematics and Cognitive Sciences* (algebraic geometry, theory of perception)

Frank B. Cannonito, Ph.D. Adelphi University, *Professor Emeritus of Mathematics* (group theory)

René A. Carmona, Ph.D. Université de Marseille, *Professor of Mathematics* (probability, mathematical physics)

Larry Chrystal, M.A. University of California, Irvine, *Lecturer in Mathematics*

Donald Darling, Ph.D. California Institute of Technology, *Professor Emeritus of Mathematics*

Panagiotas Daskalopoulos, Ph.D. University of Chicago, *Assistant Professor of Mathematics* (partial differential equations, harmonic analysis, geometric analysis)

Rui J. P. de Figueiredo, Ph.D. Harvard University, *Professor of Electrical and Computer Engineering and of Mathematics*

William F. Donoghue, Jr., Ph.D. University of Wisconsin, *Professor Emeritus 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)

Matthew D. Foreman, Ph.D. University of California, Berkeley, *Professor of Mathematics and of Philosophy* (logic)

Michael D. Fried, Ph.D. University of Michigan, *Professor of Mathematics* (arithmetic geometry, complex variables)

Svetlana Jitomirskaya, Ph.D. Moscow State University, *Assistant Professor of Mathematics* (mathematical physics)

Richard K. Juberg, Ph.D. University of Minnesota, *Professor Emeritus of Mathematics* (analysis, differential equations)

Gerhard K. Kalisch, Ph.D. University of Chicago, *Professor Emeritus of Mathematics* (functional analysis)

Ludmil Katzarkov, Ph.D. University of Pennsylvania, *Assistant Professor of Mathematics* (algebraic geometry, representation theory)

Abel Klein, Ph.D. Massachusetts Institute of Technology, *Professor of Mathematics* (mathematical physics)

Peter Li, Ph.D. University of California, Berkeley, *Department Chair and Professor of Mathematics* (differential geometry)

Penelope Maddy, Ph.D. Princeton University, *Professor of Philosophy and of Mathematics* (logic, philosophy, and foundations of mathematics)

George S. McCarty, Ph.D. University of California, Los Angeles, *Professor Emeritus of Mathematics* (algebraic topology)

Huseyin A. Nesin, Ph.D. Yale University, *Associate 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, *Department Vice Chair for Administration and Undergraduate Studies and Associate Professor of Mathematics* (differential geometry)

Bernard Russo, Ph.D. University of California, Los Angeles, *Department Vice Chair for Graduate Studies and 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)

Senya Shlosman, Ph.D. Kiev University, *Professor of Mathematics* (probability, mathematical physics)

William H. Smoke, Ph.D. University of California, Berkeley, *Professor Emeritus of Mathematics* (homological algebra)

Ronald J. Stern, Ph.D. University of California, Los Angeles, *Professor of Mathematics* (geometry and topology)

Luen-fai Tam, Ph.D. Stanford University, *Professor of Mathematics* (differential geometry, partial differential equations)

Edriss Titi, Ph.D. Indiana University, *Associate Professor of Mathematics and of Mechanical and Aerospace Engineering* (partial differential equations, nonlinear analysis)

Howard G. Tucker, Ph.D. University of California, Berkeley, *Professor of Mathematics* (probability and statistics)

Frederic Yui-Ming Wan, Ph.D. Massachusetts Institute of Technology, *Vice Chancellor for Research and Dean of Graduate Studies, and Professor of Mathematics and Mechanical and Aerospace Engineering* (applied mathematics)

Richard A. Wentworth, Ph.D. Columbia University, *Assistant Professor of Mathematics* (complex geometry, gauge theory, low-dimensional topology)

Robert W. West, Ph.D. University of Michigan, *Professor Emeritus of Mathematics* (algebraic topology)

Joel J. Westman, Ph.D. University of California, Los Angeles, *Professor Emeritus of Mathematics* (analysis)

Robert J. Whitley, Ph.D. New Mexico State University, *Professor 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)

Weian Zheng, Ph.D. Université de Strasbourg, *Associate Professor of Mathematics* (probability)

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

The Department offers a major in Mathematics, a specialization in Statistics, and a minor in Mathematics.

Undergraduate mathematics courses are of several kinds: courses preparatory to advanced work in mathematics, the exact sciences, and engineering; courses for students of the social and biological sciences; and courses for liberal arts students and those planning to enter the teaching field.

### Admission to the Major

Students may be admitted to the Mathematics major upon entering the University as freshmen, via change of major, and as transfer students from other colleges and universities. Information about change of major policies is available in the Physical Sciences Student Affairs Office. For transfer student admission, preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following required course work of one year of approved calculus.

### REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57–61.

**School Requirements:** None.

### Departmental Requirements

**Lower Division Requirements:**

A. Mathematics 2A-B-C-D-E; 3A; 2F or 3D (with 3D recommended).

B. Computing skills attained through either Information and Computer Science 21, Engineering E10, or Engineering ECE11.

C. Physics 5A-B-C or Chemistry 1A-B-C. (This also satisfies UCI breadth requirement category II if taken with the accompanying laboratories.)

**Upper Division Requirements:** Most of the upper-division Mathematics courses are organized into a series of Core Areas. The Core Areas are: Numerical Analysis (courses numbered 100–109); Applied Mathematics (110–119); Algebra (120–129); Probability and Statistics (130–139); Analysis (140–149); Logic (150–159);

and Geometry/Topology (160–169). There are also non-Core-Area courses (170–199). Students are required to complete 15 upper-division one-quarter lecture courses in Mathematics (with associated laboratories when applicable) as follows:

- A. Mathematics 120A, 121A
- B. Mathematics 140A-B
- C. A third lecture course from the Algebra Core Area (120–129)
- D. A third lecture course from the Analysis Core Area (140–149)
- E. One additional lecture course from either the Algebra or the Analysis Core Area
- F. Two lecture courses from a third Core Area
- G. One lecture course from a fourth Core Area
- H. Five additional lecture courses in Mathematics chosen from the Core Areas or from courses numbered 170–189

**NOTE:**

1. Under some circumstances (e.g., double majors), students with prior approval from the Mathematics Department Undergraduate Advisor may substitute appropriate upper-division courses from another department for up to three of the five courses for requirement H.
2. Mathematics courses numbered 190–199 may not be used to fulfill the course requirements for the major.
3. Undergraduates who wish to enroll in graduate Mathematics courses should obtain the prior approval of the Mathematics Department Undergraduate Advisor.

**Mathematics Major with Specialization in Statistics**

Satisfaction of all the requirements for the Mathematics major; in fulfilling requirements F and H, students must include the following courses: Mathematics 131A-B-C, 132A-B-C (plus the associated laboratories), and one additional course approved in advance by the Mathematics Department Undergraduate Advisor.

**Requirements for the Minor**

One course selected from Mathematics 13, 120A, or 140A, plus six additional upper-division lecture courses in Mathematics (plus the associated laboratories, where applicable) numbered 100–169. (NOTE: Nearly all upper-division courses in Mathematics have Mathematics 2A-B-C as prerequisites, and many courses have additional prerequisites such as Mathematics 2D, 2E, 2F, 3A, and/or 3D.)

**Sample Program — Mathematics Major Interested in Pure Mathematics or Preparing for Graduate Study in Mathematics**

FALL	WINTER	SPRING
<b>Freshman</b>		
Math. 2A	Math. 2B	Math. 2C
Breadth/Elective	Physics 5A	Physics 5B, 5LB
Breadth/Elective	Breadth/Elective	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective
<b>Sophomore</b>		
Math. 3A	Math. 2D	Math. 2E
Physics 5C, 5LC	Math. 3D	ICS 22
Breadth/Elective	ICS 21	Math. 13
Breadth/Elective	Breadth/Elective	Breadth/Elective
<b>Junior</b>		
Math. 120A	Math. 120B	Math. 121B
Math. 140A	Math. 121A	Math. 140C
Breadth/Elective	Math. 140B	Math. 147
Breadth/Elective	Breadth/Elective	Breadth/Elective
<b>Senior</b>		
Math. 140D	Math. 141A	Math. 141B
Math. 150	Math. 151	Math. 162B
Breadth/Elective	Math. 162A	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective

**PLANNING A PROGRAM OF STUDY**

There is a variety of career patterns the UCI 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.

**Sample Program — Mathematics Major Interested in Applied Mathematics**

FALL	WINTER	SPRING
<b>Freshman</b>		
Math. 2A	Math. 2B	Math. 2C
Breadth/Elective	Physics 5A	Physics 5B, 5LB
Breadth/Elective	Breadth/Elective	Breadth/Elective
<b>Sophomore</b>		
Math. 2D	Math. 3A	Math. 2E
Physics 5C, 5LC	Physics 5D, 5LD	Math. 3D
ICS 21	ICS 22	Physics 5E, 5LE
Breadth/Elective	Breadth/Elective	Math. 13
<b>Junior</b>		
Math. 120A	Math. 121A	Math. 121B
Math. 140A	Math. 140B	Math. 140C
Breadth/Elective	Math. 171A	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective
<b>Senior</b>		
Math. 105A, 105LA	Math. 105B, 105LB	Math. 107, 107L
Math. 114A	Math. 112A	Math. 112B
Math. 140D	Math. 114B	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective

**Sample Program — Mathematics Major Specializing in Mathematical Statistics**

FALL	WINTER	SPRING
<b>Freshman</b>		
Math. 2A	Math. 2B	Math. 2C
Breadth/Elective	Physics 5A	Physics 5B, 5LB
Breadth/Elective	Breadth/Elective	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective
<b>Sophomore</b>		
Math. 3A	Math. 2D	Math. 2E
Physics 5C, 5LC	Math. 3D	ICS 22
Breadth/Elective	ICS 21	Math. 13
Breadth/Elective	Breadth/Elective	Breadth/Elective
<b>Junior</b>		
Math. 120A	Math. 121A	Math. 121B
Math. 132A, 132LA	Math. 132B, 132LB	Math. 132C, 132LC
Math. 140A	Math. 140B	Math. 140C
Breadth/Elective	Breadth/Elective	Breadth/Elective
<b>Senior</b>		
Math. 105A, 105LA	Math. 105B, 105LB	Math. 131C, 131LC
Math. 131A, 131LA	Math. 131B, 131LB	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective
Math. 140D	Breadth/Elective	Breadth/Elective

## 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 Department offers four pathways which lead to the Master of Science in Mathematics degree: Pure Mathematics, Applied Mathematics, Applied Mathematical Statistics, and the Master of Science with a Teaching Credential. The first three programs are described below; the last is described in the next section.

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 lecture 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, 220A-B-C, and 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, 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, 202 and 202L, 204A-B and 204LA-LB, and either 203A-B-C or 210A-B-C.

In order to satisfy the Comprehensive Examination requirement in the regular Master's program in Mathematics, a student in either the Pure Mathematics concentration or the Applied Mathematics concentration must pass two of the three written Area Examinations (see the Ph.D. program below) at the Master's level or better. In the Applied Mathematical Statistics concentration, however, the Comprehensive Examination ordinarily is comprised of the final examinations in the following courses: Mathematics 201C, 202, and 204B.

Students must satisfy the language requirement 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 ordinarily is satisfied by full-time enrollment for three quarters immediately preceding the award of the M.S. degree. When appropriate, a leave of absence may be granted between matriculation and the final quarters of study.

### Master of Science in Mathematics with a Teaching Credential

In cooperation with the UCI Department of Education, the Department of Mathematics sponsors a coordinated two-year program leading to the M.S. degree in Mathematics and the California Single Subject Teaching Credential. In this program the M.S. degree can be obtained under one of two plans: either Plan I (Thesis) or Plan II (Comprehensive Examination). Prospective graduate students interested in this program should so indicate on their applications and should request a detailed description of the program from the Department of Mathematics or the Department of Education.

### DOCTOR OF PHILOSOPHY IN MATHEMATICS

A student seeking the Ph.D. in Mathematics must demonstrate mastery in the three basic areas of Real Analysis, Complex Analysis, and Algebra, by (a) passing Mathematics 210A-B-C, 220A-B-C, and 230A-B-C (or approved equivalents) with a grade of B or better; and (b) passing three written Area Examinations, one for each of these basic areas, at the Ph.D. level. The Area Examinations, which include both undergraduate and graduate material, are normally given twice each year, just before the start of the fall and winter quarters. All students seeking the Ph.D. degree must successfully complete these examinations within two years of entering the graduate program; students admitted to the Ph.D. program with a Master's degree in mathematics from another institution must successfully complete at least one of these examinations within one year (and complete the rest within two years).

The Department also requires the following for advancement to candidacy for the Ph.D. degree: satisfactory performance at the post-Master's level in nine approved one-quarter graduate lecture courses, which must *exclude* Mathematics 201, 202, 204, 210, 220, 230, 298, 299, and 399; satisfactory performance in one language examination (French, German, or Russian); and satisfactory performance in the oral qualifying examination.

The oral qualifying examination is conducted by a candidacy committee, appointed by Department on behalf of the Dean of Graduate Studies and 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 Department Chair on behalf of the Dean of Graduate Studies and 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 (4).** Lecture, three hours; discussion, two hours. Preparation for calculus and other mathematics courses. Basic equations and inequalities, linear and quadratic functions, and systems of simultaneous equations. Exponentials, logarithms, trigonometry, polynomials, and rational functions. Satisfies no requirements other than contribution to the 180 units required for graduation. Mathematics 1 and 1B may not both be taken for credit.

**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) F, 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, satisfactory performance on the algebra or pre-calculus placement examinations offered periodically by the Mathematics Department, or consent of instructor. Mathematics 1B and 1 may not both be taken for credit.

**2A-B-C Calculus and Analytic Geometry.** Lecture, three hours; discussion, two hours.

**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. Prerequisite: pass the UCI Precalculus test, or get a grade of C (2.0) or better in Mathematics 1 or 1B at UCI, no more than one year before enrolling in Mathematics 2A. (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 Infinite Series and Three-Dimensional Geometry (4) F, W, S, Summer.** Sequences, infinite series, and Taylor series. Lines and planes in space; vectors; parametric curves and surfaces in space; cylindrical and spherical coordinates. Other topics as time permits. Prerequisite: Mathematics 2B. (V)

**2D-E Calculus in Two- and Three-Dimensions.** Lecture, three hours; discussion, two hours.

**2D (4) F, W, Summer.** Differential and integral calculus of real-valued functions of several real variables, including applications. Prerequisites: Mathematics 2A-B-C.

**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. Prerequisites: Mathematics 2D and 3A.

**2F Matrices and Differential Equations (4).** Lecture, three hours; discussion, two hours. Matrices, determinants, systems of linear equations, eigenvalues and eigenvectors;  $n$ -th order linear equations, undetermined coefficients, variation of parameters; linear systems with constant coefficients; other topics (e.g., Laplace transforms, series solutions around singular points) as time permits. Prerequisites: Mathematics 2A-B-C. Mathematics 2F and Mathematics 3D may not both be taken for credit. *Not offered 1996-97.*

**3A Introduction to Linear Algebra (4) F, W, S, Summer.** Lecture, three hours; discussion, two hours. Vectors, matrices, linear transformations, dot products, determinants, systems of linear equations, vector spaces, subspaces, dimension. Prerequisites: Mathematics 2A-B-C. Mathematics 3A and Mathematics 6C may not both be taken for credit.

**3D Elementary Differential Equations (4) W, S.** Lecture, three hours; discussion, 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. Prerequisites: Mathematics 2A-B-C, 3A. Mathematics 3D and Mathematics 2F may not both be taken for credit.

**6 Discrete Mathematics.** Lecture, three hours; discussion, 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 products. Mathematics 6C and Mathematics 3A may not both be taken for credit. (V)

**7 Basic Statistics (4) F, W, S, Summer.** Lecture, three hours; discussion, 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) S.** Lecture, three hours; discussion, two hours. The style of precise definition and rigorous proof which is characteristic of modern mathematics. Topics include set theory, equivalence relations, proof by mathematical induction, and number theory. Students construct original proofs to statements. 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 Biological Sciences H90A-B-C, 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 Numerical Analysis (4-4) F, W.** Lecture, three hours. Introduction to the theory and practice of numerical computation. **105A:** Floating point arithmetic, roundoff; solving transcendental equations; quadrature; linear systems, eigenvalues, power method. **105B:** Lagrange interpolation, finite differences, splines, Padé approximations; Gaussian quadrature; Fourier series and transforms. Corequisite: concurrent enrollment in 105LA-LB when offered. Prerequisites: for 105A: Mathematics 2A-B-C and some acquaintance with computer programming; for 105B: Mathematics 105A. Only one course from Mathematics 105A, Engineering CE185, and Engineering ME185 may be taken for credit.

**105LA-LB Numerical Analysis Laboratory (2-2) F, W.** Laboratory, two hours. Provides practical experience to complement the theory developed in Mathematics 105A-B. Corequisite: concurrent enrollment in Mathematics 105A-B.

**107 Numerical Differential Equations (4) S.** Lecture, three hours. Theory and applications of numerical methods to initial and boundary-value problems for ordinary and partial differential equations. Corequisite: concurrent enrollment in Mathematics 107L if offered. Prerequisites: Mathematics 2F or 3D; 105A-B.

**107L Numerical Differential Equations Laboratory (2) S.** Laboratory, two hours. Provides practical experience to complement the theory developed in Mathematics 107. Corequisite: concurrent enrollment in Mathematics 107.

**112A-B-C Mathematical Methods for Engineering and Science (4-4-4) F, W, S.** Lecture, three hours; discussion, one hour. Introduction to classical applied mathematics for students of engineering and the physical sciences.

**112A:** Fourier series and classical partial differential equations (wave, heat, Laplace equations); orthogonal expansions and Sturm-Liouville theory.

**112B:** Ordinary differential equations and special functions; stability theory; applications. **112C:** Partial differential equations, calculus of variations. Prerequisites: for 112A: Mathematics 3D (or 2F), and Mathematics 114A (or

Mathematics 147 or Engineering ECE180); for 112B: Mathematics 112A or 146; for 112C: Mathematics 112B. Mathematics 112A-B-C and Physics 110A-B-C may not both be taken for credit. Mathematics 112A and Mathematics 146 may not both be taken for credit.

**114A-B Applied Complex Analysis (4-4)** Introduction to complex functions and their applications to engineering and science. **114A:** Complex numbers, elementary functions; analytic functions; complex integration; power series; residue theory; conformal maps; applications. **114B:** Applications to potential theory, flows; heat; Laplace transforms; asymptotic expansions. Prerequisites: for 114A: Mathematics 2D; Mathematics 2E, and 3D or 2F recommended. For 114B: Mathematics 114A or 147. Only one course from Mathematics 114A, Mathematics 147, and Engineering ECE180 may be taken for credit.

**118A-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 or 6C; and either 2F or 3D, the latter being strongly recommended.

**120A Introduction to Abstract Algebra: Groups (4) F.** Lecture, three hours; discussion, two hours. Axioms for group theory; permutation groups, matrix groups. Isomorphisms, homomorphisms, quotient groups. Basic structure theorems through Sylow theorems. Special emphasis on students doing proofs. Prerequisite: Mathematics 3A or 6C; Mathematics 13 is strongly recommended.

**120B Introduction to Abstract Algebra: Rings and Fields (4) W.** Lecture, three hours; discussion, two hours. Basic properties of rings; ideals, quotient rings; polynomial and matrix rings. Elements of field theory. Prerequisite: Mathematics 120A.

**121A-B Linear Algebra (4-4) W, S.** Lecture, three hours; discussion, two hours. Introduction to modern abstract linear algebra. Special emphasis on students doing proofs. **121A:** Vector spaces, linear independence, bases, dimension. Linear transformations and their matrix representations. Theory of determinants. **121B:** Canonical forms; inner products; similarity of matrices. Prerequisites: Mathematics 3A or 6C; Mathematics 13 strongly recommended; prior or concurrent enrollment in Mathematics 120A recommended.

**123 Coding Theory (4).** Lecture, three hours. Hamming codes, BCH codes, Reed-Solomon codes, codes on curves. Polynomial rings over finite fields. Prerequisites: Mathematics 120A, 121A.

**124 Algebra and Some Famous Impossibilities (4).** Lecture, three hours; discussion, one hour. Proof of the impossibility of certain ruler-and-compass constructions (squaring the circle; trisecting angles); nonexistence of analogs to the "quadratic formula" for polynomial equations of degree 5 or higher. The necessary algebra introduced as needed. Prerequisite: Mathematics 3A or 6C. Mathematics 120A or 121A recommended.

**130A-B-C Probability and Stochastic Processes (4-4-4) F, W, S.** Lecture, three hours. Introductory course emphasizing applications. **130A:** Probability, with focus on continuous distributions. **130B:** Distributions of sums and limit theorems. **130C:** 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 data analysis. Probability distributions, random variables, moments, estimation. Hypothesis testing and confidence intervals. Random simulations. Simple linear regression. Corequisite: concurrent enrollment in Mathematics 131LA-LB-LC. Prerequisites: Mathematics 2A-B-C; Mathematics 2D recommended.

**131LA-LB-LC Mathematical Statistics Laboratory (1-1-1) F, W, S.** Laboratory, two hours. Provides practical experience to complement the theory developed in Mathematics 131A-B-C. Special emphasis on data analysis and using existing computer programs. Corequisite: concurrent enrollment in Mathematics 131A-B-C.

**132A-B-C Discrete Probability and Mathematical Theory of Sample Surveys (4-4-4) F, W, S.** Lecture, three hours; discussion (132A only), two hours.

**132A:** Introduction to discrete probability with focus on those topics required for sample survey theory, especially the case of equally likely events. Random variables. Expectation, moments of random variables, covariance and correlation. Conditional expectation. Limit theorems. Prerequisite: Mathematics 2A-B-C.

**132B-C:** 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 132LB-LC. Prerequisites: for 132B: Mathematics 132A; for 132C: Mathematics 132B.

**132LB-LC Sample Surveys Laboratory (1-1) W, S.** Laboratory, two hours. Provides practical experience to complement the theory developed in Mathematics 132. Corequisite: concurrent enrollment in Mathematics 132B-C.

**140A-B-C-D Elementary Analysis (4-4-4-4) F, W, S, F.** Lecture, three hours; discussion, two hours. **140A-B:** Introduction to real analysis, including: the real number system, convergence of sequences, infinite series, differentiation and integration, and sequences of functions. Students are expected to do proofs. **140C:** Rigorous treatment of multivariable differential calculus. Jacobians, Inverse and Implicit Function theorems. **140D:** Rigorous treatment of multivariable integral calculus. Multiple integrals in  $\mathbb{R}^n$ ; iterated integrals and Fubini's theorem; change-of-variables theorem; differential forms and Stokes' theorem. Prerequisites: for 140A-B, Mathematics 2C, 2D, and either 2F or 3D; Mathematics 13 is strongly recommended. For 140C, some background in linear algebra (Mathematics 3A, 6C, or 2F), and 140B. For 140D, Mathematics 140C.

**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.

**145 Topics in Analysis (4).** Lecture, three hours. Topics not usually covered in Elementary Analysis, e.g., Fourier series, the calculus of variations, operational analysis, integral equations. Prerequisites: Mathematics 140A-B or consent of instructor. May be repeated for credit as topics vary.

**146 Fourier Analysis (4) S.** Lecture, three hours. Rigorous introduction to the theory of Fourier series and orthogonal expansions; applications to partial differential equations such as vibrating strings. Prerequisites: Mathematics 140A-B; 2F or 3D. Mathematics 146 and Mathematics 112A may not both be taken for credit.

**147 Complex Analysis (4).** Rigorous treatment of basic complex analysis: analytic functions, Cauchy integral theory, power series, residue calculus. Students are expected to do proofs. Prerequisites: Mathematics 140A-B. Only one course from Mathematics 114A, Mathematics 147, and Engineering ECE180 may be taken for credit.

**150 Introduction to Mathematical Logic (4) F.** Lecture, three hours. First-order logic through the Completeness Theorem for predicate logic. Prerequisite: consent of instructor. Mathematics 150 and Philosophy 105B may not both be taken for credit. Formerly Mathematics 150B.

**151 Set Theory (4) W.** Lecture, three hours. Axiomatic development; infinite sets; cardinal and ordinal numbers. Prerequisite: Mathematics 150. Mathematics 151 and Philosophy 105A may not both be taken for credit. Formerly Mathematics 150A.

**152 Computability (4) S.** Lecture, three hours. Computable functions; undecidability; Goedel's Incompleteness Theorem. Prerequisite: Mathematics 150. Mathematics 152 and Philosophy 105C may not both be taken for credit. Formerly Mathematics 150C.

**162A-B Introduction to Differential Geometry (4-4) W, S.** 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. Mathematics 171A-B-C and Engineering ECE181A-B-C may not both be taken for credit.

**171A Linear Programming (4).** Simplex algorithm, duality, optimization in networks. Prerequisite: Mathematics 3A or 6C.

**171B Nonlinear Programming (4).** Conditions for optimality, quadratic and convex programming, geometric programming, search methods. Prerequisites: Mathematics 2D and 171A.

**171C Integer and Dynamic Programming (4).** Multistage decision models, applications. Prerequisites: Mathematics 171B and consent of instructor.

**176 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 1996-97.*

**177 Mathematical Foundations of Life Contingencies (4).** Lecture, three hours. A rigorous mathematical development of single-life functions, multiple life functions, and multiple decrement functions. Mathematics 176 and 177 prepare the student for the fourth actuarial examination. Prerequisites: Mathematics 2A-B-C, 176, and either Mathematics 130A or 132. *Not offered 1996-97.*

**179A-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 1996-97.*

**180 Introduction to Number Theory (4).** Lecture, three hours; discussion, one hour. The ring of integers. Divisibility. Prime numbers and factorization. Number-theoretic functions such as the Moebius function and the Euler function. Congruences, Moebius inversion, perfect numbers, diophantine equations, quadratic residues. Other topics as time permits. Prerequisite: Mathematics 2A-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 150, 151, 152; 120A, 121A-B; 120A-B, 121A; 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 120A, 121A-B; 120A-B, 121A; 150, 151, 152; 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 120A, 121A-B; 120A-B, 121A; 150, 151, 152; or consent of instructor.

**190 Technical Writing and Communication Skills (4) F, W, S.** Lecture, three hours. Workshop in writing technical reports, journal articles, proposals. Oral presentations. Communicating with the public. May not be used in satisfaction of any School or departmental requirement. Prerequisites: upper-division standing; satisfaction of the lower-division writing requirement. Open to Mathematics majors only. Same as Chemistry 139 and Physics 129.

**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 120A, 130A, 133A-B, 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.

**208 General Topology (4) F.** Lecture, three hours; discussion, one hour. Fundamental notions of topology necessary for successful graduate study. Connectedness, compactness, separation axioms, convergence. Other topics as time permits. Strongly recommended for all graduate students. Prerequisites: Mathematics 140A-B and either 140C or 141A.

**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.

**216A-B-C Observer Theory (4-4-4) F, W, S.** Lecture, three hours. 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 Psychology 233A-B-C.

**218A-B Introduction to Manifolds and Geometry (4-4) W, S.** Homotopy; the fundamental group and covering spaces; simplicial complexes; topological and differentiable manifolds; differential forms; Stokes' theorem. Prerequisite: Mathematics 141B or 208 or consent of instructor.

**220A-B-C Analytic Function Theory (4-4-4) F, W, S.** Lecture, three hours. Standard theorems about analytic functions. Harmonic functions. Normal families. Conformal mapping. Prerequisites: Mathematics 140A-B-C or equivalent or consent of instructor.

**221A-B Several Complex Variables (4-4).** Lecture, three hours. Introduction to the study of holomorphic functions in several complex variables. Topics include: Automorphism group of a domain, Bergman kernel function, boundary behavior of Poisson integrals, pluriharmonic functions, Hardy and Bergman spaces, Mobius invariant function spaces, subharmonicity, convexity. Prerequisites: Mathematics 210, 220, and 260.

**230A-B-C Algebra (4-4-4) F, W, S.** Lecture, three hours. Elements of the theories of groups, rings, fields, modules. Galois theory. Modules over principal ideal domains. Artinian, Noetherian, and semisimple rings and modules. Prerequisites: Mathematics 120A and 121A-B or equivalent, or consent of instructor.



**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.

**237A-B Homological Algebra (4-4).** Lecture, three hours. Categories and functors, including the category of modules over a (possibly noncommutative) ring; direct sums and products, direct and projective limits, tensor products and Hom; image, kernel, complexes, homology and exact sequences. Applications. 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. Prerequisites: Mathematics 141A-B or consent of instructor.

**245A-B-C Topics in Differential Geometry (4-4-4).** Lecture, three hours. Continuation of Mathematics 240A-B-C. Topics to be determined by the instructor. Prerequisites: Mathematics 240A-B-C or consent of instructor. May be repeated for credit as topics vary.

**250A-B-C Algebraic Topology (4-4-4).** Lecture, three hours. Topics vary with instructor. Prerequisites: Mathematics 230A and 141A-B, or equivalent, or consent of instructor.

**255A-B-C Topics in Algebraic Topology (4-4-4).** Lecture, three hours. Continuation of Mathematics 250A-B-C. Topics to be determined by the instructor. Prerequisite: 250A-B-C or consent of instructor. May be repeated for credit as topics vary.

**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.

**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.

**274 Topics in Probability (4-4-4).** Lecture, three hours. Selected topics, such as theory of stochastic processes, martingale theory, stochastic integrals, stochastic differential equations. Prerequisites: Mathematics 270A-B-C or consent of instructor. May be repeated for credit as topics vary.

**277A-B-C Topics in Mathematical Physics (4-4-4).** Lecture, three hours. Topics to be determined by the instructor. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

**280A-B-C Mathematical Logic (4-4-4).** Lecture, three hours. Prerequisite: consent of instructor.

**285A-B-C Topics in Mathematical Logic (4-4-4).** Continuation of Mathematics 280A-B-C. Topics to be conducted by the instructor. Prerequisite: Mathematics 280A-B-C or consent of instructor. May be repeated for credit as topics vary.

**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).** Continuation of Mathematics 295A-B-C. Topics to be determined by the instructor. Prerequisites: Mathematics 295A-B-C or consent of instructor. May be repeated for credit as topics vary.

**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 AND ASTRONOMY

4129 Physical Sciences II; (714) 824-6911  
Jon M. Lawrence, *Department Chair*

### Faculty

Myron Bander, Ph.D. Columbia University, *Professor of Physics* (elementary particle theory)

Steven Barwick, Ph.D. University of California, Berkeley, *Associate Professor of Physics* (experimental high-energy particle astrophysics)

Gregory A. Benford, Ph.D. University of California, San Diego, *Professor of Physics* (plasma physics and astrophysics)

Walter E. Bron, Ph.D. Columbia University, *Professor of Physics* (experimental condensed matter physics, laser science)

Gary A. Chanan, Ph.D. University of California, Berkeley, *Professor of Physics* (experimental astrophysics)

Liu Chen, Ph.D. University of California, Berkeley, *Professor of Physics* (theoretical plasma physics)

Igor Dzyaloshinskii, Ph.D. Institute for Physical Problems (U.S.S.R.), *Professor of Physics* (condensed matter theory)

Rognvald Garden, Ph.D. University of Edinburgh (Scotland), *Associate Professor of Physics* (experimental astrophysics)

Herbert W. Hamber, Ph.D. University of California, Santa Barbara, *Professor of Physics* (elementary particle theory)

William W. Heidbrink, Ph.D. Princeton University, *Associate Professor of Physics* (experimental plasma physics)

Herbert Hopster, Ph.D. University of Aachen (Federal Republic of Germany), *Professor of Physics* (experimental surface physics)

Andrew Lankford, Ph.D. Yale University, *Professor of Physics* (experimental particle physics)

Jon M. Lawrence, Ph.D. University of Rochester, *Department Chair and Professor of Physics* (experimental condensed matter physics)

Mark A. Mandelkern, Ph.D. University of California, Berkeley; M.D. University of Miami, *Professor of Physics* (experimental particle physics and medical physics)

Alexei A. Maradudin, Ph.D. University of Bristol (England), *Professor of Physics* (condensed matter theory)

Meinhard E. Mayer, Ph.D. Parhon University (Romania), *Professor Emeritus of Physics* (mathematical physics)

Roger D. McWilliams, Ph.D. Princeton University, *Professor of Physics* (experimental plasma physics)

Douglas L. Mills, Ph.D. University of California, Berkeley, *Professor of Physics* (condensed matter theory)

William R. Molzon, Ph.D. University of Chicago, *Professor of Physics* (experimental particle physics)

Orhan Nalcioglu, Ph.D. University of Oregon, *Professor of Radiological Sciences, Medicine, Electrical and Computer Engineering, and Physics*

Riley Newman, Ph.D. University of California, Berkeley, *Professor of Physics* (experimental particle physics and gravitational physics)

Lewis Nosenow, 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, *UCI Distinguished Professor Emeritus of Physics* (experimental particle physics)  
 John Rosendahl, M.S. University of California, Irvine, *Lecturer in Physics*  
 Norman Rostoker, D.Sc. Carnegie Institute of Technology, *Professor Emeritus of Physics* (plasma physics)  
 Steven P. Ruden, Ph.D. University of California, Santa Cruz, *Associate Professor of Physics* (theoretical astrophysics)  
 James E. Rutledge, Ph.D. University of Illinois, *Associate Professor of Physics* (experimental condensed matter physics)  
 Nathan Rynn, Ph.D. Stanford University, *Professor Emeritus of Physics* (plasma physics)  
 Jonas Schultz, Ph.D. Columbia University, *Professor of Physics* (experimental particle physics)  
 Gordon L. Shaw, Ph.D. Cornell University, *Professor Emeritus of Physics* (elementary particle theory)  
 Dennis J. Silverman, Ph.D. Stanford University, *Professor of Physics* (elementary particle theory)  
 Tammy Smecker-Hane, Ph.D. The Johns Hopkins University, *Assistant Professor of Physics* (theoretical and experimental astrophysics)  
 Henry W. Sobel, Ph.D. Case Institute of Technology, *Professor of Physics in Residence* (experimental particle physics)  
 Peter Taborek, Ph.D. California Institute of Technology, *Professor of Physics* (experimental condensed matter physics)  
 Virginia L. Trimble, Ph.D. California Institute of Technology, *Professor of Physics* (theoretical astronomy) (on leave F)  
 Gerard Van Hoven, Ph.D. Stanford University, *Professor Emeritus of Physics* (plasma physics and astrophysics)  
 Richard F. Wallis, Ph.D. Catholic University of America, *Professor Emeritus of Physics* (condensed matter theory)  
 Steven White, Ph.D. Cornell University, *Associate Professor of Physics* (condensed matter theory)  
 Gaurang B. Yodh, Ph.D. University of Chicago, *Professor of Physics* (experimental particle physics)  
 Clare Yu, Ph.D. Princeton University, *Associate 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 and Astronomy offers courses for students of various interests, from those in the humanities and social sciences, to those in biological sciences, and to those in physics, engineering, and other sciences. Faculty members are conducting active research in several forefront areas of physical research, and there is student access to specialized research areas such as 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 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 four lower-division sequences in physics are distinguished by their intended audience, their mathematical prerequisites, and the extent to which they offer preparation for more advanced courses. These aspects of the beginning courses are summarized as follows:

**Physics 3:** *Intended audience:* Premedical students, Biological Sciences majors. *Prerequisites:* algebra and trigonometry; concurrent enrollment in Mathematics 2. *Preparation for advanced courses:* Physics 5C with permission.

**Physics 5:** *Intended audience:* Physics, Chemistry, Mathematics, and Engineering majors. *Prerequisites:* Mathematics 2A (Calculus); Physics 1 or passing score on physics placement test. *Preparation for advanced courses:* all upper-division courses in physics.

**Physics H6:** *Intended audience:* Physics, Chemistry, Mathematics, and Engineering majors. *Prerequisites:* Advanced Placement (AP) mathematics and physics or passing scores on physics placement test. *Preparation for advanced courses:* all upper-division courses in physics.

**Physics 16-24:** *Intended audience:* Nonscience majors. *Prerequisites:* none. *Preparation for Advanced courses:* none.

## Admission to the Major

Students may be admitted to the Physics major upon entering the University as freshmen, via change of major, and as transfer students from other colleges and universities. Information about change of major policies is available in the Physical Sciences Student Affairs Office. For transfer student admission, preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of approved calculus and one year of calculus-based physics with laboratory.

## REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57-61.

**School Requirements:** None.

## Departmental Requirements

Physics 5A-B-C (or H6A-B-C) and 5D-E with laboratory courses 5LB-LC-LD-LE; Physics 9; Physics 111A-B-C, 112A-B-C, 113A-B, and 115; two quarters of advanced laboratory (Physics 120-123); Mathematics 2A-B-C-D, 3A, and 3D; and four 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 Department of Physics and Astronomy. If these courses include Electrical and Computer Engineering 110A-B, the advanced laboratory requirement is reduced to one quarter of Physics 121-123.

## Requirements for the Concentration in Biomedical Physics

The requirements of the concentration in Biomedical Physics include all the requirements of the Physics degree (except the four additional coherently related upper-division science electives), *plus* the following: Biological Sciences 94, 97, 98, and 99; Chemistry 1A-B-C, 1LB-LC, 51A-B, 51LA-LB (or 52A-B and 52LA-LB).

## 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).

Mathematics 2E is strongly recommended during the sophomore year.

### Honors Program in Physics

The Honors Program in Physics provides an opportunity for selected students majoring in Physics to pursue advanced work in one of the research areas of the Department. Admission to the program is based on an application normally submitted by the sixth week of the spring quarter of the junior year. Applicants must have an overall grade point average of at least 3.4 and a grade point average in physics courses of 3.5 or better. (Exceptions to these procedures and standards may be granted in unusual circumstances.) In selecting students for the program, the Department considers evidence of ability and interest in research.

Students admitted to the program participate in a year-long course, Physics H196A-B-C, which includes two quarters of research and a final quarter in which a written thesis is submitted. If this work and the student's final GPA are deemed of honors quality by the program advisor, the student then graduates with Departmental Honors in Physics.

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. 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, 5A-B-C, or H6A-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 Mathematics 2D.

Physics H6A-B-C is an honors sequence for the student with a strong background in calculus. The content parallels Physics 5A-B-C, but includes more mathematical sophistication and phenomenological material.

Physics 9 is an introduction to the use of computers in Physics.

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.

Courses numbered 111 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 111 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. Laboratory work is assigned to separate courses, numbered 120–123. Any Physics major who is so inclined may take more than the minimum two quarters of advanced laboratory work. Courses numbered between 132 and 149 introduce active subdisciplines in current research. The

Physics major with a career goal, for example, in law, teaching, or business should emphasize the Physics 130 series, which covers most of the important phenomena of physics. Every Physics major is encouraged to participate in independent research (195, 196).

Transfer students are specifically advised to seek individual consultation with a member of the Physics and Astronomy faculty before deciding on a program of courses.

Every Physics major should avoid overspecialization and wisely use undergraduate years to explore some areas remote from physics. Introductory courses in biology and chemistry are recommended options.

Note also that alternatives to Physics major requirements can be approved upon petition to the Department and the Office of the Associate Dean. Furthermore, exceptionally prepared students are allowed to enroll in graduate-level courses; to do so requires the approval of the Physics and Astronomy 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 selected courses from the Biological Sciences core curriculum.

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 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 40 and 140. Courses from the Physics 16 through 24 sequence may be appropriate.

### Sample Program — Physics

A typical course program for Physics majors considering the possibility of graduate study in physics is shown below.

FALL	WINTER	SPRING
<b>Freshman</b>		
Math. 2A	Math. 2B	Math. 2C
Chemistry 1A	Chemistry 1B, 1LB	Chemistry 1C, 1LC
Physics 1	Physics 5A	Physics 5B, 5LB
Elective/Breadth	Elective/Breadth	Elective/Breadth
<b>Sophomore</b>		
Math. 2D	Math. 3A	Math. 3D
Physics 5C, 5LC	Physics 5D, 5LD	Physics 5E, 5LE
Elective/Breadth	Elective/Breadth	Physics 9
Elective/Breadth	Elective/Breadth	Elective/Breadth
<b>Junior</b>		
Physics 111A	Physics 111B	Physics 111C
Physics 112A	Physics 112B	Physics 112C
Elective/Breadth	Elective/Breadth	Elective/Breadth
Elective/Breadth	Elective/Breadth	Elective/Breadth
<b>Senior</b>		
Physics 113A	Physics Elective	Physics 123
Physics 121	Physics 113B	Physics 113C
Physics 125	Physics 115	Physics 116
Elective/Breadth	Elective/Breadth	Elective/Breadth

**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 and Astronomy Department. Examples of appropriate courses include Engineering AE135, ECE70, ECE110A, ECE110B, ECE113, ECE114A, ECE114B, ECE176, ECE178, ME120, and ME147. Upon completion of the Applied Physics concentration, the student will receive a B.S. degree in Physics.

**Sample Program — Applied Physics**

FALL	WINTER	SPRING
<b>Junior</b>		
Physics 111A	Physics 111B	Physics 111C
Physics 112A	Physics 112B	Physics 112C
Engr. ECE113	Engr. ECE110A	Engr. ECE110B
Elective	Elective	Elective
<b>Senior</b>		
Physics 113A	Physics 113B	Physics 113C
Physics 121	Physics 115	Physics 133
Engr. ECE114A or ECE176	Engr. ECE114B or ECE178	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; for example ECE11 and ECE70A are prerequisites to most upper-division courses in Electrical Engineering.

**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 nine quarters of basic courses in biology and chemistry. Students who wish to follow the Biomedical Physics concentration are advised to seek guidance early in their college careers. The requirements are such that coordination of a program in the 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).

**Sample Program — Biomedical Physics**

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.

FALL	WINTER	SPRING
<b>Sophomore</b>		
Physics 5C, 5LC	Physics 5D, 5LD	Physics 5E, 5LE
Math. 2D	Chem. 51B, 51LB	Math. 3D
Chem. 51A, 51LA	Bio. Sci. 94	Physics 9
Elective/Breadth	Math. 3A	Elective/Breadth
<b>Junior</b>		
Physics 111A	Physics 111B	Physics 111C
Physics 112A	Physics 112B	Physics 112C
Bio. Sci. 97	Bio. Sci. 98	Bio. Sci. 99
Elective/Breadth	Elective/Breadth	Elective/Breadth
<b>Senior</b>		
Physics 113A	Physics 113B	Physics 113C
Physics 121	Physics 115	Physics 123
Elective/Breadth	Elective/Breadth	Elective/Breadth
Elective/Breadth	Elective/Breadth	Elective/Breadth

**Sample Program — Astrophysics**

FALL	WINTER	SPRING
<b>Freshman</b>		
Math. 2A	Math. 2B	Math. 2C
Physics 1	Physics 5A	Physics 5B, 5LB
Elective/Breadth	Elective/Breadth	Elective/Breadth
Elective	Elective	Elective
<b>Sophomore</b>		
Math. 2D	Math. 3A	Math. 3D
Physics 5C, 5LC	Physics 5D, 5LD	Physics 5E, 5LE
Elective/Breadth	Elective/Breadth	Physics 9
Elective/Breadth	Math. 2E	Elective/Breadth
<b>Junior</b>		
Physics 111A	Physics 111B	Physics 111C
Physics 112A	Physics 112B	Physics 112C
Elective/Breadth	Physics 144 or 145	Physics 137
Elective/Breadth	Elective/Breadth	Elective/Breadth
<b>Senior</b>		
Physics 113A	Physics 113B	Physics 113C
Physics 121	Physics 115	Physics 123
Physics 135	Physics 144 or 145	Physics 136
Elective/Breadth	Elective/Breadth	Elective/Breadth

**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. Completion of the Ph.D. typically requires six years of full-time study.

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.

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 along with the written examination. All members of the first oral committee will be from the Department of Physics and Astronomy. 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 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. All new teaching assistants are required to enroll in Physics 269.

**Dissertation.** A dissertation summarizing the results of original research performed by the student under the supervision of a doctoral committee, appointed by the Department Chair on behalf of the Dean of Graduate Studies and the Graduate Council, will be required for the Ph.D. degree. A criterion for the acceptability of a dissertation by the Department is that it be suitable for publication in a scientific journal. The dissertation must not have been submitted to any other institution prior to its submission to the UCI Physics and Astronomy Department.

**Defense of Dissertation.** Upon completion of the dissertation, the student will take an oral examination, open to the public, before the doctoral committee.

**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); 217 (Nuclear Physics); 222 (Hydrodynamics); 236A-B-C (Astrophysics); 255 (General Relativity).

*For the student with an interest in condensed matter physics:*

214A-B (Statistical Physics); 214C-D (Many Body Theory); 221 (Elasticity); 222 (Hydrodynamics); 232A-B (Group Theory); 235A (Advanced Quantum Mechanics); 238A-B-C (Solid State Theory).

*For the student with an interest in elementary particle physics:*

214A-B (Statistical Physics); 232B (Group Theory); 235A-B (Advanced Quantum Mechanics); 237A-B-C (Elementary Particle Theory).

*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 (Special Topics in 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:** Vectors; motion, force, and energy. **3B:** Heat; electricity and magnetism. **3C:** Fluids; waves and sound; optics; quantum ideas; atomic and nuclear physics; relativity. Prerequisite or corequisite: Mathematics 2A-B. (II)

**3LB-LC Basic Physics Laboratory (1.5-1.5); 3LB (W, Summer), 3LC (S, Summer, F).** Laboratory accompanying Physics 3B-C, three hours. **3LB:** Practical applications of electronics and classical physics to biology. Goals include skill to use oscilloscope and other basic instrumentation. **3LC:** Practical applications of physics to medical imaging. Topics include optics, radioactivity, and acoustics. Physics 3LC formerly 3LA. (II)

**5A-B-C-D-E Fundamental Physics (4-4-4-4-4) W, S, F, W, S; 5A-B-C (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 (Summer).** Laboratory accompanying Physics 5B-C (or H6B-C) and 5D-E, three hours. **5LB:** Introduction to mechanics and error analysis. Topics include momentum and energy conservation, rotational dynamics, and oscillations. **5LC:** Introduction to electrical circuits, stressing the skilled use of the oscilloscope and other basic instrumentation. Topics include Ohm's Law resonant circuits, and Faraday's Law. **5LD:** Introduction to optics. Topics include geometric optics, electromagnetic wave propagation, and spectroscopy. **5LE:** Introduction to modern physics. Topics include energy quantization, radioactivity, thermal effects, and superconductivity. Physics 5LB-LC (II)

NOTE: Physics H6A-B-C satisfies the same requirements and serves as the same prerequisites as Physics 5A-B-C; corresponding segments may not both be taken for credit.

**H6A-B-C Honors Fundamental Physics (4-4-4) W, S, F.** Lecture, three hours; discussion one hour. **H6A:** Newtonian mechanics, kinematics, and dynamics of motion. Equilibrium. Facility in calculus essential. Prerequisite: satisfactory pretest score or score of at least 4 on the Mathematics (AB or BC) and Physics (Test C, Part I) Advanced Placement Examination. **H6B:** Gravity; fluids and solids; oscillations and waves. Corequisite: Mathematics 2C. Prerequisite: a grade of B or better in Physics H6A, or a grade of A- or better in Physics 5A, or consent of instructor. **H6C:** Electrostatics, magnetostatics, currents and fields, circuit elements, Maxwell's equations. Prerequisite: a grade of B or better in Physics H6B, or a grade of A- or better in Physics 5B, or consent of instructor. Concurrent enrollment in Physics 5L is required each quarter of H6B-C. (II)

**9 Introduction to Computers in Physics (4) S.** An introduction to computers, operating systems, and structured programming. In-depth training in Fortran and an introduction to symbolic computation using Mathematica. Elementary numerical methods applied to physics problems. Corequisite: Mathematics 3D.

## 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).** 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 Physical Science of the Earth and Cosmos.** Introduction to the physical environment. The formation, structure, and evolution of the Earth, planets, stars, galaxies, and the universe as a whole. The natural sciences breadth requirement is satisfied by any three courses from Physics 20A, 20B, 20C, 20D, and Earth System Science 20E-F. Open to non-Physics majors only.

**20A Introduction to Astronomy (4) F, S.** History of astronomy. Underlying physics. Objects in the solar system and how they are studied. Properties of stars: their formation, structure, and evolution. Pulsars and black holes. Galaxies and quasars. (II)

**20B Cosmology: Man's Place in the Universe (4) W.** "Cook's Tour" of the universe. Ancient world models. Evidence for universal expansion; the size and age of the universe and how it all began. The long-range future and how to decide the right model. Anthropic principle. (II)

**20C Geophysics: The Making of the Earth (4).** 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. *Not offered 1996-97.* (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 Biological Sciences H90A-B-C, Chemistry H90A-B-C, and Mathematics H90A-B-C. (II)

## UPPER-DIVISION

**110A-B-C Methods of Mathematical Physics (4-4-4).** 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, 3A, and 3D or equivalent, and Physics 9. Physics 110A-B-C and Mathematics 112A-B-C may not both be taken for credit. *Not offered 1996-97.*

**111A-B-C Classical Mechanics (4-4-4) F, W, S.** Lecture, three hours; discussion, one hour. Ordinary differential equations, one-dimensional motion, oscillations, and Fourier analysis; three-dimensional motion, non-inertial coordinates, conservation laws, and Lagrangian and Hamiltonian dynamics; tensors; rigid body motion, and relativity. Prerequisites for 111A: Mathematics 2D, 3A, and 3D, Physics 5D and 9. For 111B: Physics 111A and 112A. For 111C: Physics 111B.

**112A-B-C Electromagnetic Theory (4-4-4) F, W, S.** Lecture, three hours; discussion, one hour. Vector analysis, curvilinear coordinates, electric, magnetic, and gravitational fields and potentials; partial differential equations, separation of variables, and electrodynamics; mechanical and electromagnetic waves and radiation. Prerequisites for 112A: Mathematics 2D, 3A, and 3D, Physics 5C and 9. For 112B: Physics 111A and 112A. For 112C: Physics 111B and 112B.

**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 and 110A.

**116 Thermodynamics (4) S.** Lecture, three hours. Macroscopic theory of temperature, heat, and entropy; mathematical relationships of thermodynamics; heat engines; phase transitions. Prerequisite: Physics 115.

**120 Electronics for Scientists (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. Formerly Physics 150.

**121, 122, 123 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. Prerequisite: Physics 112A. Formerly Physics 151, 152, 153.

**125 Mathematical Physics (4) F.** Lecture, three hours; discussion, one hour. Complex functions, calculus of variations, integral equations. Prerequisites: Physics 111C and 112B. *Not offered 1996-97.*

**128 Seminar in Conceptual Physics (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. May be taken for credit two times. Formerly Physics 164.

**129 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 190. Formerly Physics 139.

**131A, B, C Special Topics in Computational Physics (4-4-4).** 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. Corequisite: prior or concurrent enrollment in Physics 110A-B-C. Physics 113A recommended. Prerequisite: Physics 9. May be repeated for credit as topic varies. Concurrent with Physics 231A, B, C.

## CAPSTONE SEMINARS

**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 113B and 115.

**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. Corequisite: Physics 112B. Prerequisite: Physics 112A.

**136 Introduction to Particle Physics (4) S.** Lecture, three hours. Experimental techniques and theoretical concepts of high-energy phenomena: accelerators and detectors; classification of particles and interactions; particle properties; symmetries and mass multiplets; production and decay mechanisms. Prerequisite: Physics 113B.

**137 Introduction to Cosmology (4) 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. Prerequisite: Physics 111B.

**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) W of even years.** Lecture, three hours. Production of radiation by high-energy particles, white dwarfs, neutron stars, and black holes. Evolution of galactic nuclei, radio galaxies, quasars, and pulsars. Cosmic rays and the cosmic background radiation. Prerequisite: Physics 5E or consent of instructor.

**147 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. Formerly Physics 187.

## RESEARCH

**195 Undergraduate Research (4).** Open to seniors and occasionally to juniors with consent of the Department. Pass/Not Pass Only.

**196A-B-C Thesis in Physics (4-4-4) F, W, S.** Independent research conducted under the guidance of a faculty member. Students' research results are discussed in oral presentations, and a written proposal, progress report, and thesis are submitted. Corequisite: Physics 113A. Prerequisite: consent of instructor. Physics 196A-B-C and H196A-B-C may not both be taken for credit.

**H196A-B-C Honors Thesis in Physics (4-4-4) S.** Independent research conducted under the guidance of a faculty member. Students' research results are discussed in oral presentations, and a written proposal, progress report, and thesis are submitted. Prerequisite for H196C: satisfactory completion of the lower-division writing requirement. Open to participants in the Honors Program in Physics and to Physics majors participating in the Campuswide Honors Program. Physics H196A-B-C and 196A-B-C may not both be taken for credit. Formerly Physics H195, H196.

**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) F.** 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).** 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).** 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)** 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. 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, supernovae, 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 Condensed Matter Physics (4-4-4)** F, W, S. Lecture, three hours. Bonding in solids; crystal symmetry and group theory, elastic properties of crystals; lattice vibrations, interaction of radiation with matter; cohesion of solids; the electron gas; electron energy bands in solids; ferromagnetism; transport theory; semiconductors and superconductors; many-body perturbation theory.

**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.

**245A, B, C Special Topics in Theoretical Physics (4-4-4)** F, W, S. Lecture, three hours. Each quarter emphasizes an area of theoretical physics of current research interest. May be repeated for credit as topics vary.

**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.

**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.

**269 Seminar in Teaching Physics (1)** F. Lecture techniques; teaching problem-solving skills; group learning; practicum. Required of all new Teaching Assistants.

**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 ECOLOGY

**Daniel Stokols, Dean**

163 Social Ecology  
Undergraduate Counseling: (714) 824-6861  
Graduate Counseling: (714) 824-5917  
World Wide Web: <http://www.socecol.uci.edu/~socecol/>

## Faculty

- Phyllis F. Agran, M.D. University of California, Irvine, *Professor of Pediatrics and Social Ecology*
- Hoda Anton-Culver, Ph.D. St. Andrews University (Scotland), *Professor of Medicine (Epidemiology and Preventive Medicine) and of Social Ecology*
- Dean Bradford Baker, M.D. University of California, Berkeley, *Director of the UCI Center for Occupational and Environmental Health and Professor of Clinical Medicine and Social Ecology*
- Mark Baldassare, Ph.D. University of California, Berkeley, *Chair of the Department of Urban and Regional Planning and Professor of Social Ecology* (urban sociology, public opinion research, social impact assessment)
- Arnold Binder, Ph.D. Stanford University, *Professor Emeritus of Social Ecology* (research methodology, juvenile delinquency, police organization and methods)
- Marlon G. Boarnet, Ph.D. Princeton University, *Assistant Professor of Social Ecology* (urban economics, urban planning, urban economic development)
- Scott A. Bollens, Ph.D. University of North Carolina, *Associate Professor of Social Ecology* (growth management and policy, intergovernmental relations, regulatory impacts on private land market decisions, urban spatial structure)
- Arthur S. Boughey, Ph.D. Edinburgh University, *Professor Emeritus of Social Ecology*
- David Brownstone, Ph.D. University of California, Berkeley, *Associate Professor of Economics and Social Ecology*
- Kitty C. Calavita, Ph.D. University of Delaware, *Associate Professor of Social Ecology* (sociology of law, criminology, social deviance, immigration, and inequality)
- Chuansheng Chen, Ph.D. University of Michigan, *Assistant Professor of Social Ecology* (cross-cultural psychology, socialization of achievement, adolescent development)
- Kenneth S. Chew, Ph.D. University of California, Berkeley, *Associate 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)
- Peter Clecak, Ph.D. Stanford University, *Professor of Social Ecology*
- Ross F. Conner, Ph.D. Northwestern University, *Associate Professor of Social Ecology and Medicine* (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 Dean of Graduate Studies, School of Social Ecology, and Senior Lecturer Emeritus in Social Ecology* (attitude theory and social problems research)
- Kristen Day, Ph.D. University of Wisconsin, Milwaukee, *Assistant Professor of Social Ecology* (urban issues in environment-behavior studies)
- Ralph Delfino, M.D. University of Chicago, *Assistant Clinical Professor of Medicine and Social Ecology*
- Joseph F. DiMento, Ph.D., J.D. University of Michigan, *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. Dombink, Ph.D. University of California, Berkeley, *Associate Dean of Undergraduate Studies, School of Social Ecology, and Associate Professor of Social Ecology* (crime and criminal justice, deviance and social control)
- C. David Dooley, Ph.D. University of California, Los Angeles, *Professor of Social Ecology* (community psychology, epidemiology, economic change)
- Jonathon E. Ericson, Ph.D. University of California, Los Angeles, *Professor of Social Ecology and Social Sciences* (environmental health science; archaeological chemistry)
- Paul J. Feldstein, Ph.D. University of Chicago, *Professor of Management and Social Ecology, and FHP Foundation Chair in Health Care Management* (economics of health care)
- 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)
- Ellen Greenberger, Ph.D. Harvard University, *Professor of Social Ecology* (developmental psychology, adolescence and social institutions, work and the family, social policy)
- F. Allan Hubbell, M.D., M.S.P.H. Baylor University College of Medicine, *Chief (Acting) of Primary Care and Associate Professor of Medicine (General Internal Medicine and Primary Care) and of Social Ecology*
- Helen Ingram, Ph.D. Columbia University, *Professor of Social Ecology and of Politics and Society, and Drew, Chace, and Erin Warmington Chair in the Social Ecology of Peace and International Cooperation* (public policy, U.S.-Mexico relations, environmental resource management)
- Larry Jamner, Ph.D. State University of New York at Stony Brook, *Assistant Professor of Social Ecology* (health psychology, psychophysiology, algology)
- Paul D. Jesilow, Ph.D. University of California, Irvine, *Associate Professor of Social Ecology* (crime and criminal justice)
- Linda J. Levine, Ph.D. University of Chicago, *Assistant Professor of Social Ecology* (relations between cognitive and emotional development, how emotions influence attention and memory, the development of children's strategies for coping with negative emotions)
- Salvatore R. Maddi, Ph.D. Harvard University, *Professor of Social Ecology* (personality, psychopathology, health psychology, creativity)
- Sanjoy Mazumdar, Ph.D. Massachusetts Institute of Technology, *Associate 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)
- Shari McMahan, Ph.D. University of California, Irvine, *Adjunct Assistant Professor of Social Ecology* (environmental health, risk communication, health promotion)
- 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)
- Shiraz Mishra, M.D. Grant University (Bombay), Ph.D. University of California, Irvine, *Assistant Adjunct Professor of Medicine and Social Ecology*
- Peter Navarro, Ph.D. Harvard University, *Associate Professor of Management and Social Ecology* (electric utilities regulation, growth management, industrial policy, public policy)
- Raymond W. Novaco, Ph.D. Indiana University, *Professor of Social Ecology* (human stress, aggression, community psychology)
- Oladele Ogunseitan, Ph.D. University of Tennessee, *Assistant Professor of Social Ecology* (environmental health, microbiology, molecular ecology, environmental biotechnology, applied microbiology)
- Betty H. Olson, Ph.D. University of California, Berkeley, *Professor of Social Ecology, Biochemical Engineering, and Community and Environmental Medicine* (aquatic microbiology, environmental health and molecular biology, water resources)
- Richard Perry, J.D. Stanford University, Ph.D. University of California, Berkeley, *Assistant Professor of Social Ecology* (language and law, legal theory, law and society, linguistics)
- Joan Petersilia, Ph.D. University of California, Irvine, *Professor of Social Ecology* (program evaluation, public policy, juvenile justice)
- Henry N. Pontell, Ph.D. State University of New York, Stony Brook, *Chair of the Department of Criminology, Law and Society and Professor of Social Ecology and of Social Sciences* (criminal justice, sociology of law, medical sociology)
- JoAnn Prause, Ph.D. University of California, Irvine, *Lecturer in Social Ecology* (statistics, quantitative epidemiology, employment typology)
- Karen S. Rook, Ph.D. University of California, Los Angeles, *Professor of Social Ecology* (gerontology, social support systems, subjective well-being and health)

- Judy B. Rosener, Ph.D. Claremont Graduate School, *Senior Lecturer in Management and Social Ecology* (business and government, cultural diversity, gender and management)
- Danching Ruan, Ph.D. Columbia University, *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, *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, *Associate Professor of Social Ecology* (stress and coping, social psychology, health psychology)
- David A. Smith, Ph.D. University of North Carolina, Chapel Hill, *Associate Professor of Sociology and Social Ecology*
- Sharon Stern, Ph.D. University of Utah, *Lecturer in Social Ecology* (water pollution and treatment, environmental pollution remediation, conservation biology, health and policy)
- Daniel Stokols, Ph.D. University of North Carolina, *Dean of the School of Social Ecology and Professor of Social Ecology* (health impacts of environmental stressors, environmental design and social behavior)
- Luis Suarez-Villa, Ph.D. Cornell University, *Professor of Social Ecology* (planning and public policy, regional science, technological change and regional development)
- Lois Takahashi, Ph.D. University of Southern California, *Assistant Professor of Social Ecology* (social planning, urban and regional planning, homelessness, community attitudes, planning theory)
- William C. Thompson, Ph.D. Stanford University, J.D. University of California, Berkeley, *Professor of Social Ecology* (psychology and law, criminal justice, human judgment and decision making, use of social science in appellate litigation)
- Tanis Thorne, Ph.D. University of California, Los Angeles, *Assistant Adjunct Professor of History and Social Ecology*
- Elaine Vaughan, Ph.D. Stanford University, *Associate Professor of Social Ecology* (environmental assessment, risk perceptions, research methodology, social psychology)
- Bryan Vila, Ph.D. University of California, Davis, *Assistant Professor of Social Ecology* (criminological theory, evolution of culture, human ecology, public policy analysis)
- Howard B. Waitzkin, M.D., Ph.D. Harvard University, *Professor of Medicine, Social Sciences, and Social Ecology*
- Carol K. Whalen, Ph.D. University of California, Los Angeles, *Chair of the Department of Psychology and Social Behavior, and 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, *Acting Chair of the Department of Environmental Analysis and Design and Professor of Social Ecology* (moral development, late adolescent to early adult development, social ecology of peace)

## OVERVIEW

The School of Social Ecology is an interdisciplinary academic unit spanning the environmental, legal, behavioral, and health sciences. The School is comprised of the Departments of Criminology, Law and Society; Environmental Analysis and Design; Psychology and Social Behavior; and Urban and Regional Planning. It has 48 full-time faculty, 1,600 undergraduate majors, and 130 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 School 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 School 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. Faculty members conduct research and teach courses that 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 faculty members 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

Applied Ecology*	B.S.
Criminology, Law and Society	B.A., Ph.D.
Environmental Analysis and Design	B.A.
Environmental Health Science and Policy	M.S., Ph.D.
Health Psychology	Ph.D.
Human Development	Ph.D.
Psychology and Social Behavior	B.A.
Social Ecology	B.A., M.A., Ph.D.
Urban and Regional Planning	M.U.R.P., Ph.D.

\*Offered jointly with the School of Biological Sciences

## Honors

Honors at graduation will be awarded to about 12 percent of the graduating seniors. Eligibility for such honors will be on the basis of grade point average. 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 Dean for Undergraduate Studies. Other important factors are considered (see page 55).

## Undergraduate Program

The School of Social Ecology offers either a general interdisciplinary degree in Social Ecology or a more focused experience through degree programs in Applied Ecology, Criminology, Law and Society; Environmental Analysis and Design; and Psychology and Social Behavior.

**Continuing-Student Applicants.** Due to the high demand for admission to the School of Social Ecology, not all eligible continuing-student applicants may be accommodated at the time they may wish to change or declare a major within the School. Interested students should apply during the first three weeks of the spring quarter in the Social Ecology Undergraduate Counseling Office.

The following criteria must be met to be considered for admission into the School of Social Ecology.

**General Social Ecology major; Criminology, Law and Society major; and Environmental Analysis and Design major:** (a) completion of the Subject A requirement; (b) completion of two of the Social Ecology lower-division core courses, one of which must be in the major of your choice, with a minimum grade of a C in both courses (see School Requirements); (c) an overall minimum 2.3 GPA.

**Psychology and Social Behavior major:** (a) completion of the Subject A requirement; (b) completion of two of the Social Ecology lower-division courses, one of which must be Psychology and Social Behavior P9, Introduction to Human Behavior, with a minimum grade of a C in both courses (see School Requirements); (c) an overall minimum 2.5 GPA.

**Applied Ecology major:** (a) completion of the Subject A requirement; (b) completion of two courses selected from Environmental Analysis and Design E5 or E8, Chemistry 1A-B-C, Biological Sciences core curriculum, with a grade of a C or better in both courses.

Selection criteria are subject to change. Students should consult with the Social Ecology Undergraduate Counseling Office for current information.

## HONORS PROGRAM IN SOCIAL ECOLOGY

The Social Ecology Honors Program provides the opportunity for selected School of Social Ecology students to pursue advanced independent study. Admission to the program is based on formal 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 H190W).

## CAREER OPPORTUNITIES

Graduates of the School of Social Ecology bring a distinctive cross-disciplinary perspective to the job market. The School provides a solid foundation for those students who seek jobs in planning departments, mental health settings, educational institutions, and a variety of community and governmental agencies. Many Social Ecology students find that their interdisciplinary training is also useful for careers in management.

The School 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 and Life Planning 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 and Life Planning Center section.

## FIELD STUDY

An important aspect of the undergraduate program is its field study requirement for majors. Field study is designed to provide students with an opportunity to examine 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 Coastal Commission; American Red Cross; primary and secondary schools; Fairview Development Center; planning, legal, and design corporations). Students must select a placement site from those listed and approved by the School of Social Ecology. Unlisted or inappropriate placements, as well as those that could give the appearance of nepotism or preferential treatment, will not be approved. Departmental approval for field study will be determined by the Field Study Coordinator.

Field study is open *only* to upper-division School of Social Ecology students who are in good academic standing and have completed all prerequisite course work. All field studies are taken on a Pass/Not Pass grading basis. Further information, including field study sign-up procedures and prerequisites, must be obtained from the Social Ecology Undergraduate Counseling Office.

## Planning a Program of Study

Because there are many alternative ways to plan a program, some of which may require careful attention to specific major requirements, students should consult with the Undergraduate Counseling Office, 163 Social Ecology Building, to design an appropriate program of study.

Students who elect one of the majors in the School of Social Ecology in their freshman year might begin by taking the introductory courses required by their major. It is a good idea to take these courses early because they include fundamental concepts that are widely applicable in more advanced courses. In addition, the lower-division writing requirement of the breadth requirement (category I) should be completed during the first year. In the sophomore year, the student might complete three courses toward the breadth requirement, four courses in their major, and four electives. Students who are planning to go on to graduate school can use their freshman and sophomore years to advantage by taking courses in theory, research methods, statistics, and other areas important to graduate study. In the junior and senior years, the student should take courses in the major area and should create an individualized program of study through a combination of courses and course modules which fall in an area of interest. Particular attention should be paid to planning a program of study that will ensure that major requirements are met prior to graduation.

## Requirements for the Bachelor's Degree

**University Requirements:** See pages 57-61.

### School Requirements

Criminology, Law and Society J7, Environmental Analysis and Design E8, Psychology and Social Behavior P9, Social Ecology 10, 13, 194, 195 (four units), and one additional upper-division course (four units) chosen from any department in the School of Social Ecology *or* an additional four units of Social Ecology 195. (Social Ecology 198 and 199 may not be used to fulfill this requirement.)

**Breadth Requirement Limitation:** With the exception of categories I, V, and VII, a student in any School of Social Ecology major may count toward breadth no more than three courses offered by the School of Social Ecology.

**Departmental Requirements:** Refer to individual departments.

### Grade Requirement

A minimum grade average of at least C (2.0) is required: (1) overall, (2) in all courses required for the major program, including the School requirements, and (3) in the upper-division courses required for the major.

### Double Majors

In order to double major within the School of Social Ecology the following conditions must be met: (1) neither major program may be the general Social Ecology major, and (2) major requirements must be met for both majors without any overlap of upper-division courses.

### Additional Curricular Options

Students in the School of Social Ecology may combine their course work with the following University programs and should consult an academic counselor for further information.

### EDUCATION

Students who plan to obtain a teaching credential or a higher degree in the field of education should consult with counselors in the UCI Department of Education early in their college career. Students completing a degree program in the School of Social Ecology may qualify for a waiver of the Single Subject Credential Examination. For additional information about teaching credentials, refer to the Department of Education section.

### THE 3-2 PROGRAM WITH THE GRADUATE SCHOOL OF MANAGEMENT

Outstanding students in the School of Social Ecology 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 host universities and colleges in countries throughout the world. Additional information is available in the Center for International Education section.

### MINOR IN GLOBAL PEACE AND CONFLICT STUDIES

The minor in Global Peace and Conflict Studies is an interdisciplinary curriculum which addresses the problem of international violence; the threat of global war; and paths to worldwide cooperation in building a secure, prosperous, and democratic future. The minor is open to all UCI students. Additional information is available in the Interdisciplinary Studies section of the *Catalogue*.

### MINOR IN GLOBAL SUSTAINABILITY

The interdisciplinary minor in Global Sustainability trains students to understand the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on this planet. See the Interdisciplinary Studies section of this *Catalogue* for more information.

### MINOR IN NATIVE AMERICAN STUDIES

The minor in Native American Studies is an interdisciplinary, interschool program which focuses on history, culture, religion, and the environment. The three core courses serve as an introduction to the Native American experience from the perspective of

different historical periods and frameworks of analysis. Study in the minor is enriched by the research and teaching interests of faculty from different departments.

The minor is open to all UCI students. Additional information is available in the Interdisciplinary Studies section of the *Catalogue* and from the undergraduate counseling offices in the Schools of Social Ecology, Humanities, and Social Sciences.

## Undergraduate Major in Social Ecology

### REQUIREMENTS FOR THE BACHELOR'S DEGREE IN SOCIAL ECOLOGY

**University Requirements:** See pages 57-61.

**School Requirements:** See pages 299-300.

#### Requirements for the Major

Ten upper-division courses (numbered 100-193), selected from the Departments of Criminology, Law and Society; Environmental Analysis and Design; and Psychology and Social Behavior.

Course prerequisites established by the individual departments must be satisfied. Students may, by petition, count one Social Ecology 199 course and graduate courses (numbered 200-290) toward the upper-division requirement.

## Courses in Social Ecology

### LOWER-DIVISION

**10 Research Design (4).** 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. Social Ecology 10 and Sociology 110 may not both be taken for credit. (III)

**13 Statistical Analysis in Social Ecology (4).** Lecture, three hours. Introduction to the techniques of statistical analysis in Social Ecology. Topics include probability, statistical inference, significance testing, univariate descriptive statistics, and multivariate analysis from an interdisciplinary perspective. Prerequisite: Social Ecology 10; may be taken concurrently. Restricted to majors only. Social Ecology 13 and Social Science 10A-B-C may not both be taken for credit.

**H20A-B-C Honors: Critical Issues in the Social Sciences (6-6-6).** Lecture, three hours; seminar, two hours. Major themes, methods, and works in the social sciences from an interdisciplinary perspective. Each quarter focuses on a different topic. Weekly small seminars emphasizing the development of the skills of critical thinking and quantitative analysis through regular written work are integral to the course. Prerequisite: restricted to members of the Campuswide Honors Program. Same as Social Sciences H1E-F-G. (III)

### UPPER-DIVISION

**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 Foundations of Applied 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 laboratories employ computer graphics to investigate concepts. **166A:** Pass/Not Pass only. Prerequisite for **166B:** Social Ecology 166A. **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. Prerequisite: Social Ecology 166B. Same as Social Sciences 100A-B-C. (V)

**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.

**185A-B Senior Seminar on Peace and Conflict I, II (2-4).** Students attend weekly seminar to discuss current global issues in conflict, cooperation, and peace. Weekly attendance at GPACS Forum required. Seminar is used to analyze Forum presentations and to prepare senior research paper. **185A:** Prepare bibliography. **185B:** Prepare research proposal. Seniors only. Same as Humanities 181A-B and Social Science 184A-B. NOTE: Social Ecology 185A-B do not fulfill upper-division Social Ecology requirements.

**185C Senior Seminar on Peace and Conflict III (4).** 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. Seniors only. Same as Humanities 181C and Social Science 184C. NOTE: Social Ecology 185C does not fulfill upper-division Social Ecology requirements.

**186A-B-C Senior Seminar on Global Sustainability I, II, III (2-2-4) F, W, S.** Students attend weekly seminar to discuss current issues in global sustainability. Weekly attendance at Global Sustainability Forum also is required. Seminar utilized to analyze forum presentations and to prepare senior research paper. **A:** Prepare bibliography. **B:** Prepare research proposal. **C:** Prepare/write research paper under the direction of a faculty member. In Progress grading for 186A-B; grade for sequence given upon completion of 186C. Prerequisites: senior standing, Biological Sciences 1D when topic is Biological Conservation, Environmental Analysis and Design E20, and Earth System Science 10. Same as Biological Sciences 186A-B-C and Earth System Science 190A-B-C.

**188 Global Issues and International Perspectives (2).** Primarily for students planning to study abroad. Weekly guest lectures, giving global perspectives on culture, politics, economics, women's roles, environmental issues, language, and history. In discussion sections participants study the particular area to which they are going, and learn how to conduct themselves while there. Pass/Not Pass Only. Same as Social Sciences 188.

**H190A-B Honors Research (4-4).** Seminar, three hours. Independent work on an individual research project in addition to participation in a mini symposium in which faculty discuss their ongoing research. Students prepare a written proposal for a research project. **H190A:** Letter grade and Pass/Not Pass. **H190B:** Pass/Not Pass Only. Prerequisites: acceptance into the Honors Program; junior or senior standing.

**H190W Honors Seminar and Thesis (4).** Seminar, three hours. Students write up their honors research project (H190A-B) and prepare an oral report which is presented at the honors seminar. Prerequisites: acceptance into the honors program; junior or senior standing.

**192 Seminar on the Social Ecology Perspective (4).** Broad overview of social ecology as a paradigm for research and community problem solving. Core conceptual and methodological themes that are inherent in the social ecological perspective including homeostasis and duration-amplification, interdependencies of human environments, scope and validity of research and community interventions. Prerequisite: senior standing; consent of instructor.

**194 Naturalistic Field Research (4).** Lecture, three hours. Introduction to alternative models of experiential learning and to various methods of observation, assessment, and evaluation. Introduction to the nature of organizations and ethical issues that emerge from research and intervention in natural settings. Must be taken prior to Social Ecology 195. Enrollment in discussion section is required. Prerequisite: Social Ecology 10; satisfactory completion of the lower-division writing requirement; restricted to Social Ecology majors.

**195 Field Study (2 to 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.

## Undergraduate Major in Applied Ecology

163 Social Ecology; (714) 824-6861  
101 Biological Sciences Administration; (714) 824-5318

The School of Social Ecology and the School of Biological Sciences offer a program of undergraduate instruction leading to a B.S. 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.

## 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 or the Biological Sciences Student Affairs Office. Faculty academic advisors may be either Social Ecology or Biological Sciences faculty members.

## 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, medicine, 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.

## REQUIREMENTS FOR THE BACHELOR'S DEGREE IN APPLIED ECOLOGY

**University Requirements:** See pages 57-61.

### Requirements for the Major

**General:** Information and Computer Science 1A or 21; Mathematics 2A, 2B, and either 2C or 7; Chemistry 1A-B-C, 1LB-LC, 51A-B-C, and 51LA-LB; Physics 3A-B-C, 3LB-LC; Biological Sciences 94, 96, 97, 98, 99, 100L, and either 108 or 109; Environmental Analysis and Design E1 or E5, and E8, E103, E180, and E180L; Economics 1.

**Laboratory Courses:** Two courses from the following: Biological Sciences 111L, 112L, 113L, 114L, 122L, 129L; Environmental Analysis and Design E142L, E160L, E164L, E173L.

**Research or Field Study:** Either eight units of Biological Sciences 199 or Social Ecology 199 (research), or Social Ecology 194 plus four units of Social Ecology 195 (field study).

**Applied Ecology Elective Areas:** A minimum of three courses selected from the following list. Students should note that some courses have prerequisites.

*Environmental Biotechnology:* Biological Sciences 122, 123, 129, 137A, 137B, 189; Environmental Analysis and Design E105U, E160, E178; Chemical and Biochemical Engineering ChE165, ChE170; Civil Engineering CE166.

*Environmental Health Science:* Biological Sciences 122, 143; Environmental Analysis and Design E106, E146, E162, E164, E169A, E169B, E175, E176, E177A, E177B, E178.

*Environmental Law and Planning:* Environmental Analysis and Design E102, E105U, E106, E141, E145, E146, E147U, E150U, E153, E154, E155U, E162, E169A, E169B, E170, E171, E172, E174.

*Resource Management-Terrestrial Environments:* Biological Sciences 174, 186; Environmental Analysis and Design E105U, E142, E145, E154, E163, E164, E169A, E169B, E170, E171, E172, E174, E178.

*Water Pollution Control and Management:* Biological Sciences 122, 127; Environmental Analysis and Design E105U, E145, E155U, E160, E162, E163, E164, E168, E169A, E169B, E173, E178.

## DEPARTMENT OF CRIMINOLOGY, LAW AND SOCIETY

Henry N. Pontell, **Department Chair**

The Department of 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. The undergraduate program leads to a B.A. degree in Criminology, Law and Society.

Students are provided with opportunities to become acquainted with the varieties of behavior that society chooses to control or regulate, the methods and institutions used to achieve that control or regulation, and the approaches aimed specifically at altering unacceptable behavior. In addition, there is provision for students to use their increasing knowledge of the law, its procedures, and institutions to enhance their understanding of the social sciences.

The course of study provides excellent preparation for law school and for graduate study in sociology, criminology, and criminal justice. Careers for students who terminate their University education at the baccalaureate level may be developed through placements in criminal justice and regulatory agencies, in organizations determining public policy, and in programs that deliver services to people who have difficulties with some aspect of the legal system.

Students are strongly encouraged to select electives in a variety of departments. Courses in areas such as Psychology, Sociology, Economics, and Political Science can provide a further context for the understanding of crime, law, and criminal justice, while courses in

areas such as art history, theater, and music can enhance the quality of the student's entire life.

Field study placements are available in police departments, public defenders' offices, probation and parole agencies, the Orange County District Attorney's Office, the State juvenile detention system, the Orange County Victim/Witness Assistance Program, juvenile shelters, legislative offices, and in private legal firms.

Information on the graduate program begins on page 312.

## REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57-61.

**School Requirements:** See pages 299-300.

### Departmental Requirements

Ten courses (40 units) as specified below:

- A. Three upper-division required courses (12 units); students must select one course from each of the following three groups: Criminology, Law and Society (1) J101, J102, J103; (2) J104, J105, J106; and (3) J107, J108, J109.
- B. Seven upper-division elective courses (28 units) numbered J101-J185, selected in any combination from the four areas of study within the major: Law and Society, Law and Legal Procedure, Crime and Delinquency, and Legal Institutions of Social Control. (Courses taken to satisfy requirement A above may not also be used to satisfy requirement B.)

### Criminology, Law and Society Minor Requirements

Nine courses (36 units): Criminology, Law and Society J7, Environmental Analysis and Design E8, Psychology and Social Behavior P9, and six upper-division Criminology, Law and Society courses selected from J100-J193.

NOTE: Students pursuing a major in the School of Social Ecology may not use upper-division course work for both school, major, or minor requirements. No overlap is permitted. Social Ecology 198 and 199 may not be applied toward the minor.

## Courses in Criminology, Law and Society

### LOWER-DIVISION

**J4 Introduction to Criminal Justice (4).** Lecture, three hours. Traces our legal system from its common law heritage. Introduction to criminal and constitutional law in the United States. Court structure, corrections, probation and parole. The police activities of arrest, search and seizure, and interrogations. Juvenile Court law and procedure. (III)

**J7 Introduction to Criminology, Law and Society (4).** Lecture, three hours. Examines the major biological, sociological, and psychological explanations for crime and links them historically with prevailing systems of punishment. From classical criminology to positivism, investigates the evolution of criminological theories, their cultural and historical contexts, and their strengths and weaknesses. (III)

**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.



## UPPER-DIVISION

**J100 Special Topics in Criminology, Law and Society (4).** Lecture, three hours. Special topics courses are offered from time to time. Course content varies with interest of the instructor. Prerequisites: Criminology, Law and Society J4 or J7 and, in some cases, consent of instructor. May be repeated for credit as topics vary.

**J101 Civil Legal System (4).** Lecture, three hours. Provides an overview of the American civil legal system and of certain fundamental legal concepts as well as an introduction to legal research. Reading, briefing and debating judicial opinions, legal research, and writing an appellate legal brief. Prerequisite: Criminology, Law and Society J7

**J102 Constitutional Law (4).** Lecture, three hours. Addresses the areas of freedom of speech, freedom of religion, the right to privacy, and discrimination. Specific issues include racial and gender bias, abortion, symbolic speech, freedom of the media, defamation, advocacy of violence, and obscenity. Prerequisite: Criminology, Law and Society J7. Criminology, Law and Society J102 and Political Science 171D may not both be taken for credit.

**J103 American Socio-Legal Theory (4).** Lecture, three hours. Evolution of American legal theory from nineteenth century to present in historical context of other human sciences; emphasizes shifting relation between legitimacy of legal decisions and legal system's relative autonomy; social science research use within legal system.

**J104 Sociology of Law (4).** Lecture, three hours. Examines law creation and law enforcement in their social and political context. Discusses the major theories of law and the modern state, and presents case studies in order to evaluate the strengths and weaknesses of these theoretical perspectives.

**J105 Psychology and the Law (4).** Lecture, three hours. Psychological assumptions of American legal system and mental health aspects of provision of criminal justice services. Civil commitment, insanity defense, competence to stand trial, jury selection, eye-witness identification. Use of police, courts, correctional institutions in prevention of behavior disorder. Prerequisite: Criminology, Law and Society J4, J7, or J101; or consent of instructor. Same as Psychology and Social Behavior P164S.

**J106 Introduction to the Comparative Study of Legal Culture (4).** Lecture, three hours. Traces the anthropological and comparative cultural study of law from the nineteenth century to the present; briefly surveys the diversity of recorded legal cultures and critically examines key concepts which have been used to describe and classify them.

**J107 Deviance (4).** Lecture, three hours. Perspectives on deviance and criminality in behavior, institution, community, and myth. The suitability of contemporary theories of deviant behavior. Same as Sociology 156 and Psychology 178D.

**J108 Criminological Theory (4).** Lecture, three hours. Explores the question of crime causation from a number of theoretical perspectives in the social sciences. Schools of thought examined include utilitarianism, positivism, human ecology, social structural approaches, social process (learning) theories, labeling, and radical-critical (political) perspectives. Prerequisite: Criminology, Law and Society J4 or J7.

**J109 Legal Sanctions and Social Control (4).** Lecture, three hours. Examination of criminal sanctions as mechanisms of social control. Includes the nature, function, and organization of courts as sanction generating institutions, and problems associated with punishing white-collar and corporate illegalities.

**J114 Organized Crime and American Society (4).** Lecture, three hours. Examination of the phenomenon of American organized crime from a sociological perspective. Explanation of methods by which organized crime is tolerated at various levels of society. Emphasis on ways in which "underworld" interests interact with legitimate economic and political institutions.

**J115 Federal Law Enforcement (4).** Lecture, three hours. The peculiar legal, organizational concerns of the federal system of law enforcement and some of the crimes it is uniquely designed to address—white-collar crime, drug trafficking, racketeering, public corruption. Roles, responsibilities of the FBI, DEA, Customs, other policing agencies. Prerequisites: Criminology, Law and Society J4 or J7.

**J120 Law and Inequality (4).** Lecture, three hours. Various aspects of the law as related to three specific areas of inequality: immigration and immigrants, race, and gender. The role of law as a tool of social reform and limitations of the legal system historically in resolving inequality issues.

**J123 Family Law (4).** Lecture, three hours. Examines legal issues surrounding marriage, cohabitation, divorce, child custody and support, adoption, and the rights of parents and children in the family context. The findings of social science research are used to illuminate the legal issues. Prerequisite: Criminology, Law and Society J4, J7 or J101. Same as Psychology and Social Behavior P169P.

**J124 Social Ecology of Child Abuse and Neglect (4).** 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. Same as Psychology and Social Behavior P172P.

**J126 Drugs, Crime, and Social Control (4).** Lecture, three hours. Drug abuse in the U.S.; the psychopharmacology of various drugs; biological, psychological, and sociological explanations for drug abuse. Policy issues are discussed; students will develop and defend a set of strategies for limiting harm done by drugs and drug laws.

**J128 Environmental Law (4).** Lecture, three hours. Environmental law as combination of traditional legal principles and newly created statutes, rules, and decisions applied to environmental protection. Investigates roles of courts, legislature, executive branch and administrative agencies, and private citizens attempting to regulate environmental quality. Federal and state laws utilized. Prerequisite: Environmental Analysis and Design E8. Same as Environmental Analysis and Design E105U.

**J132 Juvenile Delinquency (4).** Lecture, three hours. Patterns of delinquent behavior, theories that explain behavior, current research aimed at enhancing exploratory power. Attempts to prevent and control delinquency are put in historical perspective. Development of the current juvenile justice system and evolution of modern juvenile law. Prerequisite: Criminology, Law and Society J7.

**J134 Victimless Crimes (4).** Lecture, three hours. Examines major theoretical, empirical, and policy-oriented research related to the design, implementation, and analysis of government intervention, through the criminal sanction, in the spheres of vice and morality.

**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; examination and identification of suspects. Pretrial motions such as speedy trial and discovery of evidence may be covered. Prerequisite: Criminology, Law and Society J4.

**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).** Lecture, three hours. A review of how the U.S. punishes and rehabilitates convicted law violators. The conflicts among the major purposes of sentencing—rehabilitation, deterrence, incapacitation—are discussed, as well as the effects of different sanctions on public safety, offender rehabilitation, and justice system costs.

**J141 Seminar in Criminal Justice (4).** Seminar, three hours. Selected topics in the field of criminal justice. 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.

**J142 White-Collar Crime (4) W.** Lecture, three hours. Examines criminal activity in business and corporate enterprise, organizations, and the professions. Theories regarding the causes and control of white-collar and corporate crime are covered as well as the numerous definitions of these terms.

**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).** Lecture, three hours. The substantive nature of criminal law as opposed to criminal procedure which is concerned with how law is enforced. Considers offenses against: the person; habitation and occupancy; property. Includes laws of: homicide, assault, battery; burglary, arson; larceny, robbery, forgery, 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, as users of violence, and as victims of violence. Prerequisite: Criminology, Law and Society J4 or J7.

**J147 Law and Social Change (4).** Lecture, three hours. Explores the relationship of law to its social setting by considering both law as a product of social change and law as a source or medium of change.

**J150 The Legal Profession (4).** Lecture, three hours. Role of the legal profession in modern society, the diverse professional roles lawyers play, the American legal profession compared with that of other societies. "Litigation explosion," ethical problems, interactions between lawyers and other professionals, training and socialization of new lawyers.

**J164 Social Control of Delinquency (4).** Lecture, three hours. Assumes familiarity with theories of juvenile delinquency, the juvenile justice system, the elements of juvenile law. Using that knowledge, students explore current research in primary and secondary prevention of delinquency, and relevant case law. Requires an original research project. Prerequisites: Social Ecology 10 and Criminology, Law and Society 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.

**J185 Criminal Justice System Capacity (4).** Lecture, three hours. Examination of "system capacity" in criminological and criminal justice related research and how it can be used to explain and describe current problems and practices in the American legal system. Limitations of sanctioning criminals due to political, physical space, and resource constraints. Prerequisite: Criminology, Law and Society J4 or J7.

## DEPARTMENT OF ENVIRONMENTAL ANALYSIS AND DESIGN

John M. Whiteley, Department Chair (Acting)

The Department of Environmental Analysis and Design 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. The undergraduate program leads to a B.A. degree in Environmental Analysis and Design.

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, urban and regional planning 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 consulting firms, environmental information centers, pollution control agencies, and health agencies.

Information on the graduate program begins on page 312.

## REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57-61.

**School Requirements:** See pages 299-300.

### Departmental Requirements

Ten courses (40 units) as specified below:

- A. Four upper-division core courses (16 units) selected from Environmental Analysis and Design E101-E109.
- B. Six upper-division specialty courses (24 units) numbered E100, E110-E193, selected in any combination from the areas of Socio-Environmental Studies, Design, Planning, Public Policy, and Environmental Health Science.

### Environmental Analysis and Design Minor Requirements

Nine courses (36 units): Criminology, Law and Society J7, Environmental Analysis and Design E8, Psychology and Social Behavior P9, and six upper-division Environmental Analysis and Design courses, of which a minimum of two are selected from E101-E109U and the remainder are selected from E100, E110-E193.

NOTE: Students pursuing a major in the School of Social Ecology may not use upper-division course work for both school, major, or minor requirements. No overlap is permitted. Social Ecology 198 and 199 may not be applied toward the minor.

### Environmental Design Minor Requirements

Eight courses (32 units): Environmental Analysis and Design E102, E108U, E120, and five additional courses selected from E104U, E105U, E121, E122, E123, E124, E125, E128, E129A-B-C, E142L, E145.

NOTE: A maximum of three courses may be counted toward both the minor in Environmental Design and the majors in Environmental Analysis and Design or Social Ecology.

### Epidemiology and Public Health Minor Requirements

Nine courses (36 units): Environmental Analysis and Design E5, E8, E177A, and six additional courses selected from E101, E122, E146, E166, E168, E175, E176, E177B, Psychology and Social Behavior P45, P134H, Biological Sciences 1C (when topic is Civilization and Disease), 143.

NOTE: A maximum of three courses may be applied toward both the minor in Epidemiology and Public Health and the majors in Applied Ecology, Environmental Analysis and Design, or Social Ecology. (Environmental Analysis and Design E8 is by necessity one of the three.)

### Urban and Regional Planning Minor Requirements

Nine courses (36 units): Environmental Analysis and Design E8, E104U, E107U, and six additional upper-division Environmental Analysis and Design courses selected from E105U, E108U, E109U, E115U, E140U, E141U, E143U, E144U, E147U, E148U, E149U, E150U, E151U, E152U, E155U.

NOTE: A maximum of three courses may be counted toward both the minor in Urban and Regional Planning and the majors in Environmental Analysis and Design or Social Ecology. (Environmental Analysis and Design E8 is by necessity one of the three.)

## Courses in Environmental Analysis and Design

### LOWER-DIVISION

**E1 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. Formerly Environmental Analysis and Design E4. (II)

**E3 Human Environments (4) W.** Lecture, three hours. Study of natural and physical components of earth's environmental problems due to human activities. Topics include global air, water, soil, biodiversity, rainforests, energy, demographics, agriculture, and urbanization. Theme is sustainability. Integrated into the science are social, legal, and economic considerations. Prerequisite: *Environmental Analysis and Design E1.* (II)

**E5 Introduction to Environmental Quality and Health (4).** Lecture, three hours. A preliminary survey of how pollution of the natural and physical environment affects human health. Topics include toxicology, epidemiology, risk assessment, water, food, air, noise, radiation, solid and hazardous waste. Included are elements of environmental administration, environmental education, consumer protection. Prerequisite: *Environmental Analysis and Design E3.* (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* when topic is appropriate. (II)

**E8 Introduction to Environmental Analysis and Design (4) F, W, S.** Lecture, three hours. Overview of general concepts, theoretical principles, and analytical techniques for investigating environmental systems. Integrates tools from both natural and social sciences to analyze contemporary environmental challenges such as pollution, resource acquisition, facility and ecosystem design, impact assessments, the formulation of environmental policy. (III)

**E15 Native American Religions and the Environmental Ethic (4) S.** Examines Native American religions and their perspectives on the human relationship to the natural environment. Topics include the rise and fall of pre-Columbian state theocracies, the ceremony of the Sacred Pipe, revitalization movements, and sacredness and ritual in contemporary life. (VII-A)

**E20 People, Cultures, and Environmental Sustainability (4).** An anthropological consideration of global environmental sustainability from the perspective of human cultures and communities. Causes and consequences of population growth, natural resource management, environmental law, environmental ethics. Case studies emphasize tropical rain forests, arid lands of Africa and North America. Same as *Anthropology 20A*.

**E45U AIDS Fundamentals (4).** Considers the biological and sociological bases of the AIDS epidemic. Topics include the history of AIDS, current medical knowledge, transmission, and how the community can respond. Same as *Psychology and Social Behavior P45*; same as *Biological Sciences 1D* when topic is appropriate. (II)

## UPPER-DIVISION

**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: *Environmental Analysis and Design E8* and, in some cases, consent of instructor.

**E101 Environmental and Public Health Policy (4).** Lecture, three hours. Examines factors involved in shaping public health and environmental policy. Topics include the role of science in public health policy, the function of governmental regulatory agencies, citizen participation, and economic and sociopolitical aspects of controlling infectious diseases and regulating carcinogens. Same as *Psychology and Social Behavior P182P*.

**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: *Environmental Analysis and Design E8.* (VII-A)

**E103 Topics in Applied Ecology (4).** Lecture, three hours. Survey of selected issues from an ecological perspective. Topics may include conservation biology, pollution and water quality, hazardous waste cleanup, fire, wetlands, politics versus the environment. Causes, effects, control, cleanup. Integrated into the science are economic, social, and legal concerns. Prerequisite: *Environmental Analysis and Design E3* or *E8* or a course in ecology. Some previous biology and chemistry is helpful.

**E104U Urban Sociology (4).** Lecture, three hours. Overview of theoretical, substantive, and policy issues in urban sociology. History of urbanization, the school of human ecology, and recent trends regarding urbanism. Time is devoted to understanding the causes and possible solutions to urban problems. Prerequisite: *Environmental Analysis and Design E8*.

**E105U Environmental Law (4).** Lecture, three hours. Environmental law as combination of traditional legal principles and newly created statutes, rules, and decisions applied to environmental protection. Investigates roles of courts, legislature, executive branch and administrative agencies, and private citizens attempting to regulate environmental quality. Federal and state laws utilized. Prerequisite: *Environmental Analysis and Design E8.* Same as *Criminology, Law and Society J128*.

**E106 Human Ecology (4).** 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: *Environmental Analysis and Design E8*.

**E107U Urban and Regional Planning (4).** Lecture, three hours. Urban and regional change and its relationship to planning in America. Seminal works concerning urban change and city models derived from these works related to policymaking functions. History of planning, aspects of planning process, roles in the planning profession considered. Prerequisite: *Environmental Analysis and Design E8* or consent of instructor.

**E108U Environmental Psychology (4).** Lecture, three hours. Impact of the physical environment on individual and group behavior. Three basic concerns examined: (a) environmental determinants of behavior at the individual and interpersonal level; (b) social planning and urban design; and (c) methodological approaches to the study of environmental issues. Prerequisites: *Social Ecology 10* and *Environmental Analysis and Design E8*. Same as *Psychology and Social Behavior P183P*.

**E109U Urban Public Policy (4).** Lecture, three hours. 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 10* and *Environmental Analysis and Design E8*.

## SOCIO-ENVIRONMENTAL STUDIES

**E110 Human Stress (4).** Lecture, three hours. Stress as a multidisciplinary topic. Biological, psychological, and sociological approaches to adaptation-related disorders. Effects of contemporary urban life, such as noise, crowding, work pressure, and traffic congestion on personal health and behavior. Methods of stress reduction. Same as *Psychology and Social Behavior P104H*.

**E111 The Family (4).** 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. Same as *Psychology and Social Behavior P168P* and *Women's Studies 187D*.

**E113 Social Ecology of Peace I (4).** Lecture, three hours. Examination of differing definitions of the problem of achieving peace and the special problems of seeking peace in the nuclear age. Same as *Psychology and Social Behavior P178P*.

**E114 Social Ecology of Peace II (4).** 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. Same as *Psychology and Social Behavior P179P*.

**E115U Leadership (4).** 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. Prerequisite: *Social Ecology 10* recommended. Same as *Psychology and Social Behavior P159S*.

**E116 Ecological Anthropology (4).** Lecture, three hours. Studies relationships between human communities and their natural environments. The role of environment in shaping culture; effects of extreme environments on human biology and social organization; anthropologist's role in studying global environmental problems, e.g., African famine, destruction of tropical rain forests. Prerequisite: *Anthropology 2A, 2B, or 2C*. Same as *Anthropology 125B*. (VII-B)

**E117 Nuclear Environments (4).** Lecture, three hours. Understanding the impact of the nuclear age on the environment and human health through the interrelated developments of nuclear power and nuclear weapons. The early years of weapon development, catastrophic environmental pollution, perils of nuclear power in the U.S. and Russia.

**DESIGN**

**E120 Elements of Environmental Design (4).** Lecture, three hours. Basic elements of environmental design such as scale, proportion, rhythm, color, sound, lighting, surfaces, texture, architectural definition of spaces, volumes, massing volumetric analysis, solids and voids, and cultural aspects of design. Excitement and creativity in design, imageability. Prerequisite: Environmental Analysis and Design E8, E102, or consent of instructor.

**E121 Living in Space (4).** 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: Environmental Analysis and Design E8.

**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: Environmental Analysis and Design E8. Same as Psychology and Social Behavior P137H.

**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: Environmental Analysis and Design E8 and E108. Same as Psychology and Social Behavior P184P.

**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 10; Environmental Analysis and Design E8 and E108. Same as Psychology and Social Behavior P188P.

**E125 Environmental Programming (4).** Lecture, three hours. Various styles and methods of programming for buildings and building interiors. Examines information designers need; methods for acquiring, sorting, and processing information; making information more scientific, systematic, and reliable; how it can be represented; value judgments involved. Prerequisites: Environmental Analysis and Design E8; E120, or consent of instructor.

**E127 International Environmental Management (4).** Lecture, three hours. Network of intergovernmental organizations (the United Nations, in particular) and international nongovernmental organizations in the field of environmental management. Analysis of key international projects and sources of information. Lessons for the integration of international research expertise. Prerequisite: Environmental Analysis and Design E8.

**E128 Design and Behavior (4).** Lecture, three hours. Tools of architectural analysis and programming. Teaches social scientists basic graphic communication tools. Prerequisites: Environmental Analysis and Design E8 and E125. Same as Psychology and Social Behavior P189P.

**E129A-B-C Research in Environmental Design I, II, III (4-4-4).** Participating in a research project selected by the professor, students will learn to frame research questions, design a research project, collect data, analyze data, and write research reports. Focus will be on "qualitative research methods." Prerequisite: Social Ecology 10 or consent of instructor. Only one quarter of E129A-B-C may be used toward upper-division requirements.

**E131U Diversity and Environments (4).** Lecture, three hours. Explores human diversity and power in built environments. Examines contributions of underrepresented groups to design and planning professions, and how race, class, gender affect use and perception of environments. Investigates ways to make environments and environmental professions more responsive to diversity.

**PLANNING**

**E140U Survey Analysis of Urban Residents (4).** 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: Environmental Analysis and Design E8; Social Ecology 10 and 166A-B-C. Same as Psychology and Social Behavior P185P.

**E141U Urban and Regional Analysis (4).** Lecture, three hours. 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. Prerequisites: Social Ecology 10 and 13.

**E142 Environmental Geology and Ecology for Land-Use Planning (4).** 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: Environmental Analysis and Design E8 and Social Ecology 10 or equivalent; previous or concurrent enrollment in Environmental Analysis and Design E142L; consent of instructor; senior standing preferred. Same as Anthropology 143A.

**E142L 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: Environmental Analysis and Design E8 and previous or concurrent enrollment in E142; consent of instructor; senior standing preferred. Same as Anthropology 143LA.

**E143U Social Ecology of the Borderlands (4).** Lecture, three hours. An introduction to the most important socioeconomic 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: Environmental Analysis and Design E8. (VII-B)

**E144U Urbanization and Social Change (4).** Lecture, three hours. Examines interactions between social structure and physical space: (1) the contemporary evolution of cities and their hinterlands in the U.S.; (2) patterns of urbanization in the Third World; and, as background for understanding these developments, (3) the re-emergence of cities in Medieval Europe. Prerequisite: Environmental Analysis and Design E8.

**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: Environmental Analysis and Design E8.

**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: Environmental Analysis and Design E8.

**E147U Locational Conflict (4).** Lecture, three hours. NIMBY (Not-In-My-Back-Yard) activities, conflicts within government, and community hostilities (e.g., between different ethnic neighborhoods) as examples of locational conflict. Various theories explaining why conflict occurs and showing how society copes. Prerequisite: upper-division standing or consent of instructor.

**E148U Cities and Transportation (4).** Lecture, three hours. The relationship between urban areas and transportation systems. Economic analysis of cities, transportation and urban form, highway congestion, environmental impacts of transportation, public transit, transportation and labor markets, and political influences on transportation planning.

**E149U Urbanization in Developing Countries (4).** Lecture, three hours. Survey of important trends and policy issues in cities of the Third World. Topics include the global urban situation, urban poverty and employment, housing issues, transportation policy, and land policy (public land ownership, land banking, and land readjustment).

**PUBLIC POLICY**

**E150U Analysis for Decision Making (4).** Lecture, three hours. Develops analytical thinking on issues and problems related to public policy. Sound public policy and management decisions rest better when based on rigorous, albeit stylized, analysis. Focuses on analytic methods which can inform the processes of policy and management deliberation.

**E151U Housing and Urban Development Policy (4).** Lecture, three hours. Surveys public policy issues and develops analytic techniques in the areas of housing and urban development. Examines a range of policy topics including housing assistance to low- and moderate-income families, housing finance system, incentives for economic development and neighborhood preservation. Recommended: previous course work in economics.

**E152U Introduction to Urban Geography (4).** Lecture, three hours. Introduction to urban geography, focusing on urban transformations, the urban system, and the internal structure of urban areas. Concepts are applied to

contemporary issues such as welfare reform, growth management, housing, and economic development. Prerequisite: Environmental Analysis and Design E8.

**E153 Public Issues in Biotechnology (4).** Lecture, three hours. Examines developments in biotechnology potentially affecting various facets of human society or warranting significant public debate. The implications for public health, environmental science, agriculture, legislation, ethics in science, public policy, economics, and technological background in genetics and ecology.

**E154 Environmental Ethics and the American Lands (4).** Lecture, three hours. History and evolution of environmental ethics in America. Management problems in national parks, wilderness areas, wild and scenic rivers, national forests. Contemporary and historical aspects/contributors to the field. Mitigation, endangered species, habitat restoration, biodiversity, and environmental activism. Field trips required. Prerequisite: upper-division standing; consent of instructor.

**E155U Water Resource Policy (4).** Lecture, three hours. Examination of contemporary water problems worldwide, with particular attention to the competing demands for water in the western U.S., and water demand by the poor in developing countries. History and analysis of U.S. water policies at local, state, and federal levels.

## ENVIRONMENTAL HEALTH SCIENCE

**E160 Microbial Ecology of Natural and Polluted Waters (4).** 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. How and why indicator organisms are used in the determination of water quality for public health. Prerequisites: Environmental Analysis and Design E5 and E8. Same as Biological Sciences 118.

**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: Environmental Analysis and Design E8 and completion of or concurrent enrollment in E160. Same as Biological Sciences 118L.

**E161 Chemistry for Environmental Engineering (3).** Lecture, three hours. 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. Corequisite: Environmental Analysis and Design E161L. Prerequisites: Chemistry 1C, Engineering CE91, or Engineering ChE60. Same as Engineering CE164.

**E161L Chemistry Laboratory for Environmental Engineering (1).** Laboratory, one hour. Experimental methods and fundamentals for environmental chemical analysis. Corequisite: Environmental Analysis and Design E161. Prerequisites: Chemistry 1C, Engineering CE91, or Engineering ChE60. Same as Engineering CE164L.

**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 Environmental Analysis and Design E5 and E8. Same as Biological Sciences 119.

**E163 Chronological Dating Techniques in Environmental Reconstruction (4).** Lecture, three hours. Radiocarbon dating as a common technique having wide applications for a variety of fields. Surveys a number of dating techniques used to establish a chronological framework. Particular emphasis placed on applications for environmental reconstruction and archeology. Prerequisite: Environmental Analysis and Design E8. Same as Anthropology 142A.

**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: Environmental Analysis and Design E8; junior standing and consent of instructor.

**E164L Environmental Chemistry Laboratory (4).** Lecture, two hours, laboratory, one hour. Involves planning, sampling, gathering, and analyzing data. Direct firsthand experience in carrying out a scientific research project from inception through final technical report. Corequisite: E164 or consent of instructor. Prerequisite: Environmental Analysis and Design E8.

**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. Criteria for monitoring cost-effectiveness of these programs. Prerequisite: Environmental Analysis and Design E8. Same as Psychology and Social Behavior P138H.

**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: Environmental Analysis and Design E8 and consent of instructor. Same as Psychology and Social Behavior P139H.

**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: Environmental Analysis and Design E8; upper-division Applied Ecology majors.

**E170 Spatial Analysis (4).** Lecture, three hours. Introduction to the methodology of spatial analysis is applied to morphology, topology, sampling designs, and pattern analysis. In laboratory, students characterize solids, create topographic sections, read maps, and perform trend surface analysis among other pattern analysis. Prerequisites: Environmental Analysis and Design E8; solid geometry, analytical geometry, statistics, or consent of instructor.

**E171 Remote-Sensing (4).** Lecture, three hours. Introduction to methodology of remote sensing techniques for environmental analysis. In the laboratory, students will analyze serial photographs and maps, perform thematic mapping and ground-truthing, and conduct remote-sensing surveys using instrumentation. Prerequisite: Environmental Analysis and Design E8; E170 or consent of instructor.

**E172 Applications of Remote-Sensing for the Environmental Sciences (4).** Lecture, three hours. Advanced course describing the potential and limits of remote-sensing as applied to the environmental sciences. A series of case studies will be examined. Prerequisites: Environmental Analysis and Design E170 and E171, or consent of instructor.

**E173 Limnology and Freshwater Biology (4).** 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 96 or consent of instructor. Same as Biological Sciences 179.

**E173L Limnology and Freshwater Biology Laboratory (4).** Analytical techniques for common water-quality variables of lakes, streams, rivers. Benthic fauna, vertebrates and invertebrates, algae, and aquatic plants. Emphasis on field methods with an experimental approach; laboratory exercises. Week-end field trips to estuaries, marshes, lakes, and streams. Prerequisite: concurrent or previous enrollment in Environmental Analysis and Design E173. Same as Biological Sciences 179L.

**E174 Restoration Ecology (4) F.** Lecture, two hours; field, two hours. Theoretical and practical aspects of habitat restoration and mitigation. Design, implementation, and monitoring of restoration projects in local habitats. Collection of seed and cuttings, planting and maintenance presented. Control of exotics in natural areas discussed. Environmental ethics of restoration emphasized. Prerequisite: Biological Sciences 96. Same as Biological Sciences 175.

**E175 Environmental Sources of Human Pathogens (4).** Lecture, three hours. Epidemiology, environmental routes of transmission, fate of human pathogens transmitted via water and food. Bacterial, viral, parasitic pathogenic organisms; diseases they cause, the immune response, and transmission routes; biology and survival of pathogens and strategies for their removal from water and food. Recommended: previous course in biology, microbiology, biochemistry, or immunology.

**E176 Environmental and Occupational Health (4).** Lecture, three hours. Occupational health theory, practice, and regulations: recognition, evaluation, and control of workplace and community health hazards. Complexities of personal and ambient environment recognizing that health is an individual's

response to a diverse and dynamic world. Same as Psychology and Social Behavior P142H.

**E177A Epidemiology I (4).** Lecture, three hours. The distribution of disease and injury across time, space, and populations. Covers basic concepts and methods of descriptive epidemiology including the natural history of disease, demography, public health interventions, models, measurement, sources of data, and indices of health. Prerequisites: Social Ecology 10 and 13, or consent of instructor. Same as Psychology and Social Behavior P128H.

**E177B Epidemiology II (4).** Lecture, three hours. Covers basic concepts of analytic epidemiology and applications, including experimental and observational designs, prevention, screening, treatment and rehabilitation, infectious disease, and injury prevention. Prerequisite: Environmental Analysis and Design E177A. Same as Psychology and Social Behavior P129H.

**E178 Environmental Biotechnology (4).** Lecture, three hours. A comprehensive yet concise description of the field of environmental biotechnology as it relates to human environments and the global ecosystem. Students will become conversant in the natural history of environmental, biotechnical developments, and the applications of biotechnology. Recommended prerequisite: a course in biology, chemistry, ecology, or environmental science.

**E180 Field Methods for Applied Ecology (4).** Uses descriptive format to introduce environmental analysis, methodology, and writing skills necessary to conduct research and produce written papers in scientific journal format. Corequisite: Environmental Analysis and Design E180L. Prerequisite: satisfactory completion of the lower-division writing requirement; senior standing. Open only to Applied Ecology majors.

**E180L Field Methods Laboratory (3).** Active participation in acquisition and analysis of data. Introduction to field sampling techniques, data collection and laboratory analysis, and the production of written papers in scientific journal format. Habitats include terrestrial, aquatic, and the built environment, both natural and polluted conditions. Corequisite: Environmental Analysis and Design E180.

## DEPARTMENT OF PSYCHOLOGY AND SOCIAL BEHAVIOR

Carol K. Whalen, Department Chair

The Department of Psychology and Social Behavior 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, health, 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. Courses cover such topics as psychosocial development in children, adolescents, and adults; gerontology; childhood behavior disorders and developmental psychopathology; sex differences; attitude change; clinical health psychology; cross-cultural perspectives; cognition and emotion; stress and coping; and counseling and therapy. Opportunities also are available to work with faculty on research in these and other areas. The undergraduate program leads to a B.A. degree in Psychology and Social Behavior.

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, public health, health services, social work, counseling, or education. Field study opportunities include schools, child care facilities, community clinics, counseling centers, hospital settings, and social service agencies, among others.

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 here in the Department of Psychology and Social Behavior section. Students interested in other areas of psychology are advised to consult the course listings in the Department of

Cognitive Sciences and the School of Biological Sciences sections of the *Catalogue*.

In addition to courses in the Department of Psychology and Social Behavior, strongly recommended courses for students who anticipate pursuing graduate study in psychology include: Biological Sciences 1C, when topics concern the biological bases of behavior; Social Ecology 166A-B-C (Social Science Statistics I, II, III); and Psychology 112A-B-C (Experimental Psychology), 140L (Learning Theory), and 146A (Human Memory).

Information on the graduate program begins on page 312.

## REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57-61.

**School Requirements:** See pages 299-300.

### Departmental Requirements

Ten courses (40 units) as specified below:

- A. Four upper-division Psychology and Social Behavior core courses (16 units), one from from each of the areas: Developmental Psychology (P101, P102), Health Psychology (P103, P104), Pre-Clinical Psychology (P105, P106, P107), and Social Psychology (P108, P109).
- B. In addition, a total of six upper-division specialty courses (24 units) in **at least** three specialty areas: Developmental Psychology (P115D-P124D), Health Psychology (P128H-P143H), Pre-Clinical Psychology (P144C-P155C), Social Psychology (P156S-P167S), or Societal Problems (P168P-P196P).

### Psychology and Social Behavior Minor Requirements

Nine courses (36 units): Criminology, Law and Society J7, Environmental Analysis and Design E8, Psychology and Social Behavior P9, and six upper-division Psychology and Social Behavior courses selected from P100-P193.

NOTE: Students pursuing a major in the School of Social Ecology may not use upper-division course work for both school, major, or minor requirements. No overlap is permitted. Social Ecology 198 and 199 may not be applied toward the minor.

## Courses in Psychology and Social Behavior

### LOWER-DIVISION

**P9 Introduction to Human Behavior (4).** Lecture, three hours. Introduction to models of human development and mental health, and the application of the scientific methods to the study of social behavior. Differences among individual, group, and societal levels of analysis and intervention emphasized. (III)

**P45 AIDS Fundamentals (4).** Lecture, three hours. Considers the biological and sociological bases of the AIDS epidemic. Topics include the history of AIDS, current medical knowledge, transmission, and how the community can respond. Same as Environmental Design and Analysis E45U; same as Biological Sciences 1D when topic is appropriate. (II)

### UPPER-DIVISION

**P100 Special Topics in Social Behavior (4).** Lecture, three hours. Special topics courses are offered from time to time. Course content varies with interest of instructor. Prerequisites: Psychology and Social Behavior P9 and, in some cases, the consent of instructor. May be repeated for credit as topics vary.

**P101 Child Development (4).** Lecture, three hours. Examines social, emotional, and intellectual growth and development between the ages of 2 and 12 years. Prerequisite: Psychology and Social Behavior P9. Psychology and Social Behavior P101 and Psychology 120D may not both be taken for credit.

**P102 Adolescent Development (4).** Lecture, three hours. Examines current research in such areas as the psychosocial impacts of puberty, decision-making competencies, biological and cultural bases for changes in family



relationships, peer groups, and their functions. Additional topics include identity formation and selected psychosocial problems of adolescence. Prerequisite: Psychology and Social Behavior P9 or Psychology 7A. Psychology and Social Behavior P102 and Psychology 21A may not both be taken for credit.

**P103 Health Psychology (4).** Lecture, three hours. Theory and research are considered as they contribute to an understanding of the role of psychological processes in health and illness. The distinction between prevention and treatment of illness is established, and a variety of psychosocial interventions are elaborated.

**P104 Human Stress (4).** Lecture, three hours. Stress as a multidisciplinary topic. Biological, psychological, and sociological approaches to adaptation-related disorders. Effects of contemporary urban life, such as noise, crowding, work pressure, and traffic congestion on personal health and behavior. Methods of stress reduction. Same as Environmental Analysis and Design E110.

**P105 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: Psychology and Social Behavior P9. Psychology and Social Behavior P105 and Psychology 120A may not both be taken for credit.

**P106 Introduction to Clinical Psychology (4).** Lecture, three hours. Overview of theories, assessment techniques, research methodologies and intervention approaches in clinical psychology. Psychodynamic, behavioral, humanistic, and cognitive perspectives are examined along with ethical and professional issues. Psychology and Social Behavior P105 and Social Ecology 10 are both strongly recommended.

**P107 Clinical Child Psychology (4).** 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: Psychology and Social Behavior P9; Social Ecology 10 recommended.

**P108 The Social Animal (4).** Lecture, three hours. Theories and research exploring social behavior and social influences on behavior. Topics include methods of social research, attitude formation and change, social perception, the social self, stereotypes and prejudice, conformity, obedience, altruism, aggression, interpersonal relationships and love, and group behavior.

**P109 Social Psychology (4).** Lecture, three hours. In-depth examination of selected social psychological topics including: causal attributions; social justice beliefs; biological and social factors in gender identity and sexual preference; courtship as bargaining and exchange; ethnocentrism; intergroup hostility; conflict resolution. Prerequisite: Psychology and Social Behavior P9 or an introductory psychology course recommended.

## DEVELOPMENTAL PSYCHOLOGY

**P115D Infant Development (4).** Lecture, three hours. Study of human development from conception through the first two years of life, covering processes and events in the domains of physical, social, and cognitive development. Prerequisite: Psychology and Social Behavior P9.

**P116D Adult Development (4).** Lecture, three hours. Examines why and how we change (with attention to gains as well as losses) from ages 25–65 and the nature and sources of continuity over time. Topics include physical and intellectual functioning, personality, coping strategies, and social roles and relationships. Prerequisite: Psychology and Social Behavior P9 and Social Ecology 10.

**P117D 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.

**P119D Cognition and Emotion (4).** Lecture, three hours. Examines relations between cognition and emotion. How have the relations between cognition and emotion been construed historically? How closely related are cognitive and emotional development? How do emotions influence reasoning and memory? How similar is emotional experience across cultures? Prerequisite: upper-division standing.

**P120D Cognitive Development (4).** Examines theories on nature of cognitive development. Discusses behaviorist theories on role of the environment including those of Vygotsky, Piaget, and recent evidence from cognitive psychologists stressing the importance of knowledge and skills within specific domains. Psychology and Social Behavior P120D and Psychology 141D may not both be taken for credit.

**P121D Human Sexuality (4).** Lecture, three hours. A broad survey of human sexuality encompassing genetic factors, physiological and anatomical development, customary and atypical forms of behavior, reproductive processes, and cultural determinants. Same as Women's Studies 187E.

**P122D Development of Gender Differences (4).** Lecture, three hours. Examination of research on how sexes differ in physiology, cognitive functioning, personality, and social behavior. Sex-differentiated development from the prenatal period through adulthood. Explanations for male-female differences are sought, focusing on biological (genetic, hormonal) and social (familial, cultural) mechanisms. Prerequisite: Psychology and Social Behavior P9. Same as Women's Studies 187B.

**P123D Perspectives on Child Rearing (4).** Lecture, three hours. Impact of different child rearing practices on the development of personality and character. Effects on development of variations in structure and dynamics of the family and school; consequences of group care, working mothers, and the one-parent family. Prerequisite: Psychology and Social Behavior P9, or any course in developmental psychology or human development.

**P124D Human Development in Cross-Cultural Perspective (4).** Lecture, three hours. Human development in diverse cultures (e.g., Asian, American, and African). Special emphasis on the East-West contrasts and when East meets West (i.e., Asian-American experiences). Topics include parenting, family relations, language and cognition, schooling and academic achievement, and morality. Prerequisites: Psychology and Social Behavior P9 and Social Ecology 10.

## HEALTH PSYCHOLOGY

**P128H Epidemiology I (4).** Lecture, three hours. The distribution of disease and injury across time, space, and populations. Covers basic concepts and methods of descriptive epidemiology including the natural history of disease, demography, public health interventions, models, measurement, sources of data, and indices of health. Prerequisites: Social Ecology 10 and 13, or consent of instructor. Same as Environmental Analysis and Design E177A. Formerly P143H.

**P129H Epidemiology II (4).** Lecture, three hours. Covers basic concepts of analytic epidemiology and applications, including experimental and observational designs, prevention, screening, treatment and rehabilitation, infectious disease, and injury prevention. Prerequisite: Psychology and Social Behavior P128H. Same as Environmental Analysis and Design E177B. Formerly P144H.

**P130H Psychoneuroimmunology (4).** Lecture, three hours. Examines the interactive relationships of behavioral-neural-hormonal-immune systems and how these relationships contribute to the maintenance of health and to the development of disease. Topics include: psychosocial factors, stress, disease and immunity; behavioral dispositions toward immune-related disorders. Prerequisites: Psychology and Social Behavior P9, P104 or consent of instructor.

**P131H Child Health Psychology (4).** Lecture, three hours. Exploration of psychological antecedents, concomitants, and consequences of medical illnesses in children. Children's beliefs about health, illness, and medication; the role of stress; coronary-prone behavior; therapeutic adherence and physician-patient interaction; coping with chronic illness; effects of a child's illness on family. Prerequisite: Psychology and Social Behavior P9; Social Ecology 10 recommended.

**P132H The Human Pain Experience (4).** Lecture, three hours. Examines the physiological and sociocultural correlates of human pain perception. Emphasis on laboratory and clinical methods of measuring acute and chronic pain; social influences on the experience and communication of pain; biopsychosocial approaches to pain control. Prerequisites: Psychology and Social Behavior P9 and any upper-division course from the Health or Pre-Clinical Psychology areas.

**P133H Sociology of Mental Health and Illness (4).** Lecture, three hours. Sociological contributions of the nature, causes, and consequences of mental health and illness. 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: Psychology and Social Behavior P9 or equivalent.



**P134H Behavioral Medicine (4).** Lecture, three hours. Examines biobehavioral aspects of health and illness, focusing on how stress contributes to or exacerbates disease processes. Background information on psychosomatic medicine and stress models and detailed examination of specific organ systems emphasizing the reactivity of these systems to stress. Prerequisite: Psychology and Social Behavior P9.

**P135H 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.

**P136H Advanced Seminar: Human Stress (4).** Lecture, three hours. In-depth exposure to selected topics in the field of human stress. Includes environmental determinants of stress, life events and social support, stress-related disturbances, occupational stress, and stress management interventions. Theoretical and methodological issues in stress research. Prerequisites: Psychology and Social Behavior P104 and consent of instructor.

**P137H 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: Environmental Analysis and Design E8. Same as Environmental Analysis and Design E122.

**P138H Strategies of Health Promotion (4).** Lecture, three hours. Examination of strategies for promoting physical and mental health at community, organizational, and individual levels. Interventions designed to promote healthier lifestyles, organizational structures, and environmental conditions. Criteria for monitoring cost-effectiveness of these programs. Prerequisite: Environmental Analysis and Design E8. Same as Environmental Analysis and Design E166.

**P139H 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: Environmental Analysis and Design E8 and consent of instructor. Same as Environmental Analysis and Design E168.

**P140H Beliefs, Attitudes, and Health Behaviors (4).** Lecture, three hours. Examines health relevant beliefs, attitudes, and behaviors from a social psychological perspective. Topics include: optimism; perceived control; self-deception; protection motivation; the health belief model; and religiosity and health.

**P141H Clinical Health Psychology (4).** Lecture, three hours. Role of behavior in etiology, treatment, and prevention of certain diseases. Behavioral intervention including biofeedback, stress-, pain-management, health habit counseling, and other skills to assist patients make cognitive, emotional, and behavioral changes needed to cope with disease or achieve better health. Prerequisite: Psychology and Social Behavior P9.

**P142H Environmental and Occupational Health (4).** Lecture, three hours. Occupational health theory, practice, and regulations: recognition, evaluation, and control of workplace and community health hazards. Complexities of personal and ambient environment recognizing that health is an individual's response to a diverse and dynamic world. Same as Environmental Analysis and Design E176.

## PRE-CLINICAL PSYCHOLOGY

**P144C Personality (4).** Lecture, three hours. Comparison of the major theories of personality. Provides a frame of reference for understanding lifestyles, development, maturity, and psychopathology. Emerging research themes are used to identify promising lines of personality theorizing. Prerequisite: sophomore, junior, or senior only. Psychology and Social Behavior P144C and Psychology 120P may not both be taken for credit.

**P147C 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. Development of assessment skills and their application in intervention and research programs. Prerequisite: Psychology and Social Behavior P9; Social Ecology 10 recommended.

**P148C Counseling Theory I (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.

**P149C Behavior Modification (4).** Lecture, three hours. 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.

**P150C Cognitive Behavior Therapy (4).** Lecture, three hours. Presentation of principles and procedures of therapeutic interventions based on cognitive-behavior methods. Cognitive factors in learning, emotional arousal, psychological disorder, and psychotherapy reviewed. Introduces the application of cognitive behavioral methods to problems of depression, anxiety, anger, pain, and impulsivity.

**P151C 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: Psychology and Social Behavior P9; Social Ecology 10 recommended.

**P152C Developmental Psychopathology (4).** Lecture, three hours. Research and theory of origins, course, and outcomes of disordered behavior. Continuity and change in patterns of behavior; environmental challenges and buffers; stress and competence in children; vulnerable and invulnerable children; children of mentally ill parents; families at risk; childhood antecedents of adult disorders. Prerequisite: Psychology and Social Behavior P9; Social Ecology 10 recommended.

**P153C Existential Psychology (4).** Lecture, three hours. Overall emphasis on life's meanings and directions as an unfolding expression of the pattern of decisions engaged in by each person. Topics include relevant personality and developmental theory research, and philosophy, plus applied consideration of diagnostic testing and psychotherapy.

**P154C Women's Peer Counseling I (4).** Lecture, three hours. 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. Prerequisite: consent of instructor.

**P155C Women's Peer Counseling II (4).** Second quarter of two-quarter course which focuses on the development of basic counseling skills and knowledge in specific issues related to the psychology of women. Prerequisite: P154C and consent of instructor.

## SOCIAL PSYCHOLOGY

**P157S 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 minimally sufficient justification principle. Prejudice and discrimination. Ajzen's theory of planned behavior. Prerequisites: Psychology and Social Behavior P9 or an introductory psychology course recommended.

**P158S Social Relationships (4).** Lecture, three hours. Examines major issues, concepts, and methods in the scientific study of social relationships. Topics include relationship formation and dissolution, friendships and love relationships, loneliness, bereavement, societal influences on close relationships, significance of close relationships for health and well-being. Prerequisite: Social Ecology 10.

**P159S Leadership (4).** 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 recommended. Same as Environmental Analysis and Design E115U.

**P160S 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. Prerequisites: Social Ecology 10 or equivalent and Social Ecology 13 or equivalent.

**P161S 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 to explain the causes, dynamics, and resolution of conflicts.

**P164S Psychology and the Law (4).** Lecture, three hours. Psychological assumptions of American legal system and mental health aspects of provision of criminal justice services. Civil commitment, insanity defense, competence to stand trial, jury selection, eye-witness identification. Use of police, courts, correctional institutions in prevention of behavior disorders. Prerequisite: Criminology, Law and Society J4, J7, or J101; or consent of instructor. Same as Criminology, Law and Society J105.

**P165S Intimate Relationships (4).** Lecture, three hours. Differing conceptions of the sources of enrichment in relations between individuals. Issues affecting partnerships in contemporary society relating to choosing a partner. Partnership and relationship skills in a communication framework are developed in a laboratory section.

**P166S Family, Society, and Education (4).** Lecture, three hours. Examines the development of children's academic and cognitive competence in social context. Effects of parental beliefs, home environment, school environment, peer norms, community norms, cultural values. Effects of selected demographic factors such as ethnicity, parental SES, maternal employment, birth order. Prerequisite: Psychology and Social Behavior P9.

### SOCIETAL PROBLEMS

**P168P The Family (4).** 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. Same as Environmental Analysis and Design E111 and Women's Studies 187D.

**P169P Family Law (4).** Lecture, three hours. Examines legal issues surrounding marriage, cohabitation, divorce, child custody and support, adoption, and the rights of parents and children in the family context. The findings of social science research are used to illuminate the legal issues. Prerequisite: Criminology, Law and Society J4, J7 or J101. Same as Criminology, Law and Society J123.

**P170P Work and Family (4).** Lecture, three hours. Effects of employment and unemployment on mental health and marital quality; effects of work on parenting and child development; corporate and social policies for "families that work"; young adults' decision-making about work and family. Prerequisite: upper-division standing or consent of instructor. Same as Women's Studies 187A.

**P171P Impacts of Divorce (4).** Lecture, three hours. Examines divorce in historical, economic, and, primarily, psychological contexts, emphasizing recent research pertaining to the impacts of divorce on children, families, and society. Prerequisite: Psychology and Social Behavior P9. Same as Women's Studies 187C.

**P172P Social Ecology of Child Abuse and Neglect (4).** 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. Same as Criminology, Law and Society J124.

**P173P 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. Recommended: previous course in abnormal behavior.

**P174P Social Inequality (4).** Lecture, three hours. Examines the nature, causes and consequences of social inequality in advanced industrial societies. Focuses primarily on the United States, but references are made to other societies as well. Discusses the basic issues of social inequality followed by issues of social mobility.

**P175P Violence in Society (4).** Lecture, three hours. Current theory and research on aggression; anger and violence as problems in individual and social functioning. Process and functions of anger examined with regard to normal behavior and psychopathology. The determinants, prevalence, and implications of violence in society are analyzed.

**P176P Violence and Ideas Concerning the Social Order (4).** Lecture, three hours. Historical and philosophical perspectives of violence as a way to enhance social science views. Violence as a problem of the social order. The state of nature, the social contract, and human destructiveness explored in

conjunction with overviews of violence and warfare. Prerequisite: consent of instructor.

**P178P Social Ecology of Peace I (4).** Lecture, three hours. Examination of differing definitions of the problem of achieving peace and the special problems of seeking peace in the nuclear age. Same as Environmental Analysis and Design E113.

**P179P Social Ecology of Peace II (4).** 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. Same as Environmental Analysis and Design E114.

**P180P Philosophic Issues in Psychology (4).** Seminar, three hours. Historical, epistemological and ethical roots of modern psychology with emphasis on developmental and clinical areas. Influence of Plato on developing theories of Kohlberg and Piaget; of Hume on modern scientific psychology; mind-body problem of Descartes and the psychology of Rogers.

**P181P Mentors in Higher Education (4).** Seminar, three hours. Discussion of roles and functions of mentors in higher education. Specific mentoring issues include: personal skills, training, the sociocultural role of mentoring in higher education, student affirmative action, history and politics in higher education. Prerequisite: consent of instructor.

**P182P Environmental and Public Health Policy (4).** Lecture, three hours. Examines factors involved in shaping public health and environmental policy. Topics include the role of science in public health policy, the function of governmental regulatory agencies, citizen participation, and economic and sociopolitical aspects of controlling infectious diseases and regulating carcinogens. Same as Environmental Analysis and Design E101.

**P183P Environmental Psychology (4).** Lecture, three hours. Impact of the physical environment on individual and group behavior. Three basic concerns examined: (a) environmental determinants of behavior at the individual and interpersonal level; (b) social planning and urban design; and (c) methodological approaches to the study of environmental issues. Prerequisites: Social Ecology 10 and Environmental Analysis and Design E8. Same as Environmental Analysis and Design E108U.

**P184P 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: Environmental Analysis and Design E8 and E108U. Same as Environmental Analysis and Design E123.

**P185P Survey Analysis of Urban Residents (4).** 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: Environmental Analysis and Design E8; Social Ecology 10 and 166A-B-C. Same as Environmental Analysis and Design E140U.

**P188P 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 10; Environmental Analysis and Design E8 and E108U. Same as Environmental Analysis and Design E124.

**P189P Design and Behavior (4).** Lecture, three hours. Tools of architectural analysis and programming. Teaches social scientists basic graphic communication tools. Prerequisites: Environmental Analysis and Design E8 and E125. Same as Environmental Analysis and Design E128.

**P197 Senior Seminar in Psychology and Social Behavior (4).** Seminar, three hours. Special topics research seminars. Course varies with interest of instructor. Capstone research opportunity with Psychology and Social Behavior faculty members. Students must have finished most of Social Ecology school and departmental requirements before enrollment. Prerequisite: senior standing and/or consent of instructor.

## DEPARTMENT OF URBAN AND REGIONAL PLANNING

Mark Baldassare, **Department Chair**

Faculty research interests in the Department of Urban and Regional Planning include community attitudes and social policy, economics and public policy, land-use and growth management, transportation policy, community health planning and policy, and urban design and well-being.

The Department has collaborative academic and research ties with other units on campus including the School of Social Sciences, the Graduate School of Management, and the Institute of Transportation Studies.

Currently, the Department offers a program of study leading to the Ph.D. degree in Urban and Regional Planning, the Master of Urban and Regional Planning degree (M.U.R.P.), and an undergraduate minor in Urban and Regional Planning.

Departmental faculty also teach courses within the School's undergraduate programs in Social Ecology; Criminology, Law and Society; Environmental Analysis and Design; and Psychology and Social Behavior.

**Ph.D. in Urban and Regional Planning:** See page 316.

**Master of Urban and Regional Planning:** See page 313.

### Urban and Regional Planning Minor Requirements

Nine courses (36 units): Environmental Analysis and Design E8, E104U, E107U, and six additional upper-division Environmental Analysis and Design courses selected from E105U, E108U, E109U, E115U, E140U, E141U, E143U, E144U, E147U, E148U, E149U, E150U, E151U, E152U, E155U.

Course descriptions are available in the Department of Environmental Analysis and Design section.

NOTE: A maximum of three courses may be counted toward both the minor in Urban and Regional Planning and the majors in Environmental Analysis and Design or Social Ecology. (Environmental Analysis and Design E8 is by necessity one of the three.)

## GRADUATE PROGRAMS

Graduate training in the School of Social Ecology is organized around the study of contemporary problems in the social and physical environment. Emphasis is placed primarily upon theory and research that have implications for policy and intervention. Problems are investigated from the complementary perspectives of a multidisciplinary faculty that includes specialists in social, developmental, clinical, environmental, and health psychology; urban and regional planning and architecture; urban sociology; law; criminology; and environmental health.

Among issues of long-standing interest in the School are crime and justice in society, social influences on health and human development over the life course, and the effects of the physical environment on health and human behavior. The graduate curriculum emphasizes an interdisciplinary orientation, training students to draw upon the knowledge offered by several of the traditional academic fields in order to examine important social, legal, and environmental problems from a perspective of breadth as well as depth.

Programs of study leading to the M.A., M.S., M.U.R.P., and Ph.D. degrees are offered. Doctoral students have the opportunity to pursue an individualized course of study in the principles and methods of social ecology, leading to the Ph.D. in Social Ecology, or a specialized course of study that leads to the Ph.D. in Social Ecology with a concentration in Environmental Analysis and Design. Additional programs lead to one of the following degrees: Ph.D. in Criminology, Law and Society; Ph.D. in Environmental Health

Science and Policy; Ph.D. in Health Psychology; Ph.D. in Human Development; or Ph.D. in Urban and Regional Planning. Master's degree students may elect a course of study that leads to the M.A. in Social Ecology, the M.S. in Environmental Health Science and Policy, or the Master of Urban and Regional Planning.

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 emphasis along with laboratory experimentation. Collaborative research with faculty members is an important component of graduate education in the School.

A sampling of faculty research and teaching interests includes human stress, health promotion, biobehavioral bases of health and illness, program evaluation, economic change and behavioral disorders, atypical child development, adaptive aging, violence and aggression, use of deadly force by police, legal sanctions and deterrence, white-collar and organized crime, transitions to parenthood, personality and psychopathology, effects of social environments on early child development, urban growth management and policies, transportation policies, poverty and homelessness, water quality, air quality, biotechnology, epidemiology, the use of scientific information in public policy formation and litigation, the health impacts of work environments, and processes involved in environmental regulation.

## ADMISSION

Students should submit their application by January 15 to receive full consideration for fellowship and assistantship awards. The deadline by which the application file must be completed, including the application form, transcripts, three letters of recommendation, and Graduate Record Examination (GRE) scores, is February 1. Additional information is available from the Social Ecology Graduate Counselor; telephone (714) 824-5917, 824-5918.

## CAREER OPPORTUNITIES

Graduates enjoy a wide variety of career opportunities and have succeeded in obtaining positions in academic institutions such as Stanford University; Rutgers University; The Johns Hopkins University; Temple University; University of California, Los Angeles; University of California, San Diego; University of Colorado; University of Kansas; University of Minnesota; the University of Oregon; the University of Wisconsin; Indiana University; Carnegie Mellon 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.

## Master's Programs

### M.A. IN SOCIAL ECOLOGY

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, environmental regulation, 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). A grade of B or better must be achieved in all courses. Students are advanced to candidacy for the M.A. degree, and a thesis committee is appointed, after a review of their graduate work and thesis plans by a faculty committee. 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 School. 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 two years.

### **M.S. IN ENVIRONMENTAL HEALTH SCIENCE AND POLICY**

The Master of Science (M.S.) in Environmental Health Science and Policy (EHSP) trains environmental professionals for applied analytical and administrative positions in government, commerce, and the nonprofit sector. In common with the doctoral program in EHSP, training focuses on the integration of natural and social science knowledge for the promotion of human health within a sustainable ecosystem. M.S. students must complete a core of five required courses: Environmental Health Science (EHS) I, II, III; Data Analysis, Part A (Social Ecology 264A); and Data Analysis, Part B (Social Ecology 264B) or Ecological Modeling (Social Ecology 252); and three electives. Students must also complete a field study of about six months in duration, resulting in a defended Master's thesis and degree completion within two to three years.

### **MASTER OF URBAN AND REGIONAL PLANNING**

The Master of 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 that modern communities face. This program views planners as mediators between the market-driven forces of metropolitan change and the environmental, economic, and social impacts of such change.

Some of the specific planning issues addressed include the environmental, social, health, and economic impacts of urban and regional development; regional growth management; 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 newly industrialized countries. Students are provided not only with a rigorous foundation in the tools that 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 government 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 of Urban and Regional Planning. Students are required to complete 72 units, distributed between core and elective courses. In addition, a written comprehensive examination or a professional report 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 or the professional report also is recommended. Successful completion of the examination is required before the degree can be awarded. A thesis is not required.

### **Ph.D. Programs**

The doctoral programs offered by the School of Social Ecology prepare students for academic careers in research and teaching. Graduates also are well qualified for employment in private or government agencies, where they can bring advanced academic training, strong methodological and statistical skills, and special expertise to such issues as environmental health and design, urban and regional planning, criminal justice, and social policies affecting mental and physical health across the life course. 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 except those enrolled in the Environmental Health Science and Policy doctoral program and the Urban and Regional Planning doctoral program: 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 take additional required and elective courses, as summarized in subsequent sections that describe the individual Ph.D. programs. This additional course work is exclusive of any field study, directed study, independent study, or dissertation research courses (Social Ecology 297, 298, 299, or 296).

School 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, legal research, 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.

Before being officially advanced to candidacy for the Ph.D. degree, doctoral students must demonstrate mastery of a broad base of knowledge within their area of study. This is accomplished through successful completion of either a written comprehensive examination or a breadth requirement (see individual program descriptions for specific requirements). The breadth requirement can be completed by submitting a major paper or series of papers that intensively examine specific substantive problems and bodies of research. Preferably, the perspective taken should be multidisciplinary, but a single disciplinary approach is acceptable if it is more congruent with the student's educational goals and is acceptable to

the student's committee. Each student's plans for completing the breadth requirement are developed in collaboration with a committee of three Social Ecology faculty members. Students are encouraged to meet with this committee as early as possible during their graduate career and are required to do so 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 determine whether the breadth requirement was successfully completed, and will 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 School of Social Ecology, on behalf of the Dean of Graduate Studies and the Graduate Council. The student will appear before this committee for an oral examination. The dissertation plan will include a thorough examination of the history of the problem being proposed for investigation, its current status, the way in which the proposed research will further knowledge, a detailed specification of the proposed method of investigating the problem, and a description of the planned methods for analyzing the data collected. 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 approved 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 members of the Social Ecology faculty at the end of each year. At that time, the faculty may recommend that the student continue toward the Ph.D. degree, complete the M.A. degree only, or cease graduate studies in the School. Evaluation of Ph.D. students who have 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. IN SOCIAL ECOLOGY

The training program that leads to the Ph.D. in Social Ecology allows students to develop a tailored course of graduate study that draws upon the knowledge of several traditional academic disciplines. This is a small distinguished program intended for genuinely interdisciplinary doctoral students. The emphases of this training program are in keeping with the academic mission of the School, namely, its emphases on an ecological approach to research and policy, an interdisciplinary approach to research and community intervention, and the application of theory and research to community problem solving. Students are encouraged to integrate the diverse theoretical and methodological insights of several disciplines in order to analyze important social and environmental problems from a perspective of breadth as well as depth. In doing so, students gain familiarity with the classic and contemporary literature in social ecology and with the application of the ecological paradigm, as it has evolved in the natural and behavioral sciences.

Each incoming student takes the five core courses required of most Ph.D. students, noted above, and six elective courses, chosen in consultation with the faculty advisor. The normative time for completion of the Ph.D. requirements is four to five years. Students are encouraged to become involved in research in their first year of study by participating in the research projects of the faculty. Students complete a supervised research project before they begin work on their doctoral dissertation. Research is broadly construed to include experimental methods, questionnaire and interview studies, systematic field observation, secondary analyses, and legal analyses. This predissertation research project should be completed during the second year in residence and must be evaluated and approved by a committee of three faculty members. Students complete the breadth requirement, described earlier, during their third year of study. The fourth and possibly fifth years of study are devoted to developing and defending a dissertation proposal and conducting dissertation research.

## Ph.D. IN SOCIAL ECOLOGY WITH A CONCENTRATION IN ENVIRONMENTAL ANALYSIS AND DESIGN

The doctoral concentration in Environmental Analysis and Design prepares students to conduct research on questions of vital importance to environmental and planning professionals. These questions reflect an overarching concern with the health of humans and the natural environment. Students conduct analyses of sociocultural, behavioral, and environmental factors that influence health and well-being, including public and private sector policy. 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, and assessment of psychological effects of environmental factors. 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 most Ph.D. students, noted earlier, 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 risks, 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 in their first year of graduate study. Students complete a supervised research project before they begin work on their doctoral dissertation. This predissertation research project should be completed during the second year in residence (preferably by the end of the winter quarter of the second year). The research project must be evaluated and approved by a committee of three faculty members. Students complete the breadth requirement, described earlier, during their third year of study. The fourth and possibly fifth years of study are devoted to developing and defending a dissertation proposal and conducting dissertation research.

## Ph.D. IN CRIMINOLOGY, LAW AND SOCIETY

The study of the criminal, crime, and institutional responses to illegal behavior is the focus of the doctoral program 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. Students also become acquainted with social regulation and the civil justice system, allowing them to address the nature of illegal activities as well as the response of individuals 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; prediction of offender dangerousness; 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 training program aims to develop theoretical sophistication and to prepare the graduate student for faculty positions at major universities; and for research and administrative work in institutions in the legal system, the criminal justice system, and related organizations.

In addition to the five core courses required of most Ph.D. students, noted earlier, students take at least three required courses, *Theories of Crime*, (C235), *Law and Society*, (C239), *Legal Reasoning*, (C237), and four elective courses in Criminology, Law and Society. These elective courses should be chosen in consultation with the student's faculty advisor. Students become involved in research activities from the earliest stages of their training and complete an independent, supervised research project during the second year of graduate study. Methods of research may include experiments, questionnaire and survey studies, systematic field observation, computer simulation, and legal analyses. Students complete a written comprehensive examination during year three, which requires them to demonstrate mastery of the principles of social ecology and general knowledge of major theoretical, substantive, and methodological issues in criminology, law and society. The fourth and, possibly, 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 also are available.

## Ph.D. IN ENVIRONMENTAL HEALTH SCIENCE AND POLICY

Human health and the integrity of the natural environment are interdependent. More now than ever, challenges in public health and the environment must be faced using knowledge both from the social and the natural sciences. The graduate program in Environmental Health Science and Policy (EHSP) is rooted in existing disciplines, but emphasizes an emerging common base of knowledge that spans both the social and the natural sciences. To optimize flexibility, including options for primary emphasis on laboratory and field work, the curriculum is organized around four concentrations. The **concentration in Environmental Biotechnology** provides training in the use of microbial, genetic, or molecular applications for environmental monitoring, environmental cleanup, and other related purposes. The **concentration in Environmental Health Science** expands its conventional focus to include ecological context. The **concentration in Environmental Management and Policy** explores the linkages between physical environmental problems and the social institutions that are both their cause and solution. The **concentration in Epidemiology and Public Health**

embeds traditional approaches in these fields within a framework of physical and natural systems.

Within each concentration, students are expected to develop interests in particular substantive problems, for example, those of the core faculty, which include water quality monitoring and bioremediation, toxic metals in the environment (their characterizations, exposure levels, and health effects), international conflict and cooperation in resource management, habitat restoration and conservation biology, the demographic foundation of health and well-being, and the epidemiology of violence and injury-prevention. Students are prepared to become active researchers, able to assume positions in higher education, government, commerce, or the non-profit sector—wherever environmental quality is of concern.

Prior to graduate program admission, students must elect one of the four EHSP concentrations listed above. For all concentrations, students must complete a core of five required courses: *Environmental Health Science (EHS) I, II, III; Data Analysis, Part A (Social Ecology 264A); and Data Analysis, Part B (Social Ecology 264B) or Ecological Modeling (Social Ecology 252)*. In addition, students must complete six approved electives relating to their respective concentrations. Consistent with the program's multidisciplinary nature, elective courses may be drawn not only from within the Department of Environmental Analysis and Design but (with approval) from throughout the School of Social Ecology and the campus (including, for example, the College of Medicine or the School of Engineering). About the end of the second year, students are expected to demonstrate methodological and theoretical competence in their concentration through successful completion of an oral examination. Approval of a dissertation research plan should occur about the third year en route to degree completion in four or five years. In addition, doctoral students must complete a minimum of three quarters as a teaching assistant.

## Ph.D. IN HEALTH PSYCHOLOGY

Doctoral training in Health Psychology focuses on identifying, evaluating, and enhancing the psychosocial and behavioral factors that promote health, prevent disease, and optimize medical treatments. The training program involves a strong commitment to multidisciplinary scholarship and a focus on knowledge and theory, research competencies, and professional skills. Students are encouraged to join active investigative teams studying processes such as adaptive aging; stress, coping, and social support; biobehavioral mechanisms of cardiovascular reactivity; 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 take the five core courses required of most Ph.D. students, noted earlier. In addition, students take four required health psychology courses, *Seminar in Health Psychology (P258)*, *Biobehavioral Aspects of Health and Illness (P273)*, *Human Stress and the Environment as Stressor (P267)*, and the three-quarter *Practicum in Health Psychology (P290A-B-C)*. Also, students take one health psychology elective, *Child Health Psychology (P277)*, *Perceptions of Environmental and Health Risks (E206)*, *Interpersonal Processes and Health (P262)*, or *Psychosocial Dimensions of Chronic Illness (P231)*; and three additional courses, e.g., *Late Adulthood and Aging (P225)*, *Environmental Psychology (E288)*, *Violence and Its Social*



Impact (P237). Research on Subjective Well-Being (P248), 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 must complete an independent, supervised research project during their second year. Students take a written comprehensive examination during their third year, which requires them to demonstrate mastery of the principles of social ecology and major theoretical, substantive, and methodological issues in health psychology. 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.

Students must complete all requirements for the Ph.D. in Health Psychology no later than their eighth year of study, adjusted for any approved leaves of absence that may have been taken. It is expected that most students will complete the degree requirements well in advance of this deadline.

### Ph.D. IN HUMAN DEVELOPMENT

The doctoral program in Human Development focuses on the development of individuals across the life course and the effects of the varying social, physical, and cultural contexts in which development takes place. Students are introduced to key developmental theories and concepts, with attention to all phases of the life course; the research methods of several social science specialties; and the conduct of problem-oriented research that is relevant to the improvement of individual and societal functioning. Potential employment sites for graduates include academic institutions (e.g., departments of psychology or human development); research organizations; human services settings (e.g., hospitals, schools, community agencies); 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. Through close association with faculty members in the Human Development program and participation in their research projects, students learn to use a variety of research methods and to conduct methodologically sophisticated research that addresses contemporary social issues. 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 take the five core courses required of most Ph.D. students, noted earlier. In addition, students take two required human development courses, Principles of Human Development (P220) and Issues in Human Development (P236A-B); and two of five life cycle courses chosen from the following: Infancy (P218), Childhood (P234), Adolescence (P204), Adulthood (P230), Late Adulthood and Aging (P225). An additional four elective courses are selected from the following six clusters: life span development; foundations of development; social, physical, and cultural contexts of development; health and adjustment over the life span; social problems and policies; and methods and strategies of research. These courses should be chosen according to a plan that best meets the needs of the individual student, as determined in consultation with the student's faculty advisor. In addition to courses offered by the School of Social Ecology, the Human Development curriculum may include courses offered by the Department of Psychobiology in the School of Biological Sciences, the Graduate School of Management, and the Departments of Anthropology and Sociology in the School of Social Sciences.

Students complete an independent, supervised research project during their second year. They take a written comprehensive examination during their third year, which requires them to demonstrate mastery of the principles of social ecology and of major theoretical, substantive, and methodological issues in the study of human development. The fourth and possibly fifth years are devoted to developing and defending a dissertation proposal and completing dissertation research.

Students must complete all requirements for the Ph.D. in Human Development no later than their eighth year of study, adjusted for any approved leaves of absence that may have been taken. It is expected that most students will complete the degree requirements well in advance of this deadline.

### Ph.D. IN URBAN AND REGIONAL PLANNING

The doctoral program in Urban and Regional Planning seeks to train researchers and professionals who will further our understanding of how planning and policy-making can best improve the social, economic, and environmental characteristics of our communities and regions. The curriculum emphasizes the analytic, applied planning, and policy skills required of contemporary planners. Specializations include community attitudes and social policy, land use and growth management, economics and public policy, transportation policy, community health planning and policy, and urban design and behavior. UCI's close proximity to both urban centers and planned suburban communities, as well as its location within the dynamic Southern California and Pacific Rim regions, add to the program's appeal.

The Ph.D. program in Urban and Regional Planning features course work in planning theory and research methods, and there are substantial choices in elective courses on critical issues in urban and regional planning. A pre-dissertation research project, supervised by a faculty member, is required during the second year. The third year includes preparation for, and completion of a comprehensive examination. Following this, dissertation proposals and research begin.

### Graduate Courses in Social Ecology

**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.

**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. Prerequisite: consent of instructor.

**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.

**241A-B 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. Prerequisite: graduate standing or consent of instructor.

**255 Professional Issues (2).** Examines a variety of issues related to the professional socialization and development of graduate students in Social Ecology. Topics include the publication process, sources of research funding, alternative employment options, competitiveness in the job market, and the academic career route. Prerequisites: graduate standing and consent of instructor. May be taken for credit twice.



**257 Social Indicators (4).** A survey of the social indicators literature and presentation of individual projects attempting to devise indicators of social phenomena.

**261 Strategies of Theory Development (4).** The goals are (1) to examine key issues and controversies facing the development of social ecological theory, and (2) to encourage students to develop their own abilities as theorists. Strategies for enhancing creative hypothesis formation are emphasized.

**264A-B Data Analysis (4).** Provides an appreciation and understanding of statistics necessary to conduct applied research. Topics include approaches to and presentation of data, robust statistics, standardization techniques, multivariate regression, and analysis of variance. Prerequisite: graduate standing or consent of instructor.

**266A 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. Formerly Social Ecology 266.

**266B Applied Logistic Regression (4).** Develops statistical models to be used where the dependent variable is dichotomous. Applications to be considered include cohort and case-control analyses. Prerequisites: Social Ecology 264A-B or consent of instructor.

**266C Analysis of Statistical Power (4).** Statistical power is a crucial aspect of hypothesis testing. Students learn how to interpret statistical power; how to calculate statistical power for most common designs; and how to design experiments and quasi-experiments to optimize power. Prerequisites: Social Ecology 264A-B; and graduate standing or consent of instructor.

**270 Applied ANOVA (4).** Examines fundamental concepts and a variety of ANOVA designs, in an applied setting. Basic terminology, theoretical background, and applications of ANOVA models (univariate, multivariate, and repeated measures) with multiple comparisons are presented through lecture and use of statistical hardware. Prerequisite: one graduate-level statistics course.

**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.

**275 Special Topics in Social Ecology (2 to 4).** Topics covered vary with interests of the instructor. Prerequisite: consent of instructor. May be repeated for credit.

**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 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, 290A, 290B, and 291, 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.

## Graduate Courses in Criminology, Law and Society

**C230 Crime and Public Policy (4).** Discusses the measurement of violent crime; violent offenders and their victims; theoretical explanations of violence; the contribution of the media, drugs, guns, and alcohol to violence; and how the justice system treats and punishes violent offenders. Prerequisite: graduate standing or consent of instructor.

**C232 Juvenile Delinquency (4).** Examines the major theories of juvenile delinquency, prevention and control programs, and the administration of juvenile justice. Prerequisite: graduate standing or consent of instructor.

**C235 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. Prerequisite: graduate standing or consent of instructor.

**C236 Gender and Power in Law and Society (4).** Focuses on questions of gender and sexuality in law and society studies. Discusses concrete issues of legal regulation, social control, and social change, from the perspective of leading theoretical approaches to gender and power. Prerequisite: graduate standing or consent of instructor.

**C237 Legal Reasoning (4).** Examines the leading theoretical and philosophical approaches to jurisprudence and legal reasoning; introduces primary print and electronic sources of legal data and basic legal research techniques. Prerequisite: graduate standing or consent of instructor.

**C238 White-Collar Crime (4).** Examines the illegal behavior of individuals who commit crimes in the course of their employment. Special attention is paid to ways in which power and organizational structure affect the behavior of the white-collar offender. Prerequisite: graduate standing or consent of instructor.

**C239 Law and Society (4).** Discusses the major schools in the sociology of law from the early years to the present. Addresses the differences among the schools and locates them in their historical and intellectual context. Presents case studies, comparing the utility of these theoretical traditions. Prerequisite: graduate standing or consent of instructor.

**C240 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. Prerequisite: graduate standing or consent of instructor.

**C245 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. Prerequisite: graduate standing or consent of instructor.

**C247 Drug Policy Analysis (4).** The question of how to control drug use and abuse is a key social, political, and public health problem. Examines the problem in a comprehensive interdisciplinary fashion, then uses rigorous policy analysis techniques to develop practical policy prescriptions. Prerequisites: Social Ecology 201, C235 or C239; graduate standing or consent of instructor.

**C249 Law and Morality (4).** Examines major theoretical, empirical, and policy-oriented research related to the design, implementation, and analysis of government intervention, through the criminal sanction, in the spheres of vice and morality. Prerequisite: graduate standing or consent of instructor.

**C251 Qualitative Criminological Analysis (4).** Examines issues and strategies involved in the collection and analysis of qualitative data. Application of qualitative research methods with respect to criminology, law and society. Prerequisite: graduate standing or consent of instructor.

**C256 Probation, Parole, and Community Corrections (4).** Familiarizes students with the concepts, practices, and evidence regarding community-based sanctions (e.g., probation, parole, boot camps, work-release, fines, electronic monitoring). Community programs are compared to jails and prisons with respect to costs, public safety, and offender rehabilitation. Prerequisite: graduate standing or consent of instructor.

**C259 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. Prerequisite: graduate standing or consent of instructor.

**C276 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. Prerequisite: graduate standing or consent of instructor.

**C284 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.

## Graduate Courses in Environmental Analysis and Design

**E203 Industrial Ecology (4).** The imminent post-industrial civilization demands a new approach to the choice and methods of processing raw materials, and for the treatment of by-products of industrial metabolism. Investigates a systems approach modeled after biological ecosystems for environmentally sustainable industrial development. Prerequisite: graduate standing or consent of instructor.

**E206 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.

**E210 California's Population (4).** Provides a non-specialist introduction to social demography through a focus on California population. Surveys historical and current trends in the State's growth, its industries and occupations, and its ethnic and racial makeup. Prerequisite: graduate standing or consent of instructor.

**E212 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.

**E217 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.

**E219 Environmental Design/Urban Design: Principles (4).** Addresses the nature of environmental and urban design, and the elements, principles, and components used by designers. Deals with the interface of design with other factors influencing physical form. Involves small- and medium-sized projects. Possible site visits. Camera required. Prerequisite: graduate standing or consent of instructor.

**E220 Environmental Design/Urban Design: Studio I (4).** Deals with the design of an urban project. Requires students to develop design proposals which may be real, real derived, or concocted. Requires problem solving, design. Projects may include a design and drawing section and a written report. Possible site visits. Camera required. Prerequisites: E219; graduate standing or consent of instructor.

**E224 Environmental Health Science I: The Physical Environment (4).** Provides a background in natural processes and the physical environment. Focuses on earth processes some of which lead to natural disasters and catastrophes for human populations. Other processes are quite benign and related to anthropogenic perturbations. Prerequisite: graduate standing or consent of instructor.

**E225 Environmental Health Sciences II: Physical and Human Interaction (4).** Explores the impacts of environmental exploitation such as acid rain, the Greenhouse Effect, and industrial pollution, and the use of mineral and energy resources. Topics addressed include heavy metals, radionuclides biogeochemistry, natural toxins, food additives, pesticides, and industrial catastrophes. Prerequisite: graduate standing or consent of instructor.

**E242 Environmental Evolution and Molecular Ecology (4).** Deals with effects of the evolution of life on the evolution of physical and chemical environments of planet Earth. Includes geophysiological theories and facts, the symbiotic theories of biological evolution, and infrastructural microbial ecology. Prerequisite: graduate standing or consent of instructor.

**E243 Radiocarbon Dating for Environmental Science (4).** Discusses the basis for radiocarbon dating, potentials, and limitations of the technique using environmental case studies. Students pre-treat, prepare, and count the activity of their samples. Prerequisite: graduate standing, or Environmental Analysis and Design E163 and consent of instructor.

**E244 Toxic Substances in the Environment (4).** Examines the sources, distribution, and cycling of toxic substances in the general environment, and discusses patterns of human exposure and mechanisms of damage. Reviews the scientific basis for selected toxic-substance standards and explores the role of risk assessment. Prerequisite: graduate standing or consent of instructor.

**E246 Laboratory for Environmental Chemistry (4).** Presents the protocols for ultraclean laboratory use. Student project requires collection of environmental samples and heavy metal trace element analysis using atomic absorption spectrometry. Prerequisites: inorganic chemistry; graduate standing or consent of instructor.

**E252 Ecological Modeling (4).** Introduces students to the basic principles of modeling, and demonstrates the complex temporal and spatial relationships found in environmental science. Lectures and readings survey the broadest possible range of mathematical models found in the environmental-ecological literature. Prerequisite: graduate standing or consent of instructor.

**E265 Spatial Behavior (4).** Explores phylogenetic aspects of spatial behavior among diverse species. At the human level, four basic spatial behavioral constructs are discussed: territoriality, privacy, personal space, and crowding. Prerequisite: graduate standing or consent of instructor.

**E269A-B Research in Environmental Psychology (4).** Two-quarter sequence focusing on critical discussion and analysis of on-going research in environmental psychology being conducted by faculty, graduate students, and post-doctoral fellows. Off-campus researchers present to the group on occasion. Prerequisite: graduate standing or consent of instructor. Same as Psychology and Social Behavior P269A-B and Urban and Regional Planning U269A-B.

**E272 Principles of Environmental Design (4).** Explores the principles and processes of design in the built environment, including graphic analysis and behavioral programming. Prerequisite: graduate standing or consent of instructor.

**E278 Wastewater Management for Coastal Cities (4).** Provides students and practitioners with a theoretical and applied framework in system planning, project identification, functional design, and implementation requirements for ocean disposal of wastewaters from coastal cities. Prerequisites: graduate standing and consent of instructor.

**E279A-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. Prerequisite: graduate standing or consent of instructor.

**E280 International Cooperation (4).** Provides students with an operational framework in international environmental cooperation. Concepts, incentives, and limits to regimes and infrastructures for sustainable development discussed. Identifies cultural, demographic, economic, environmental, geographic, historical, and technological roots of cooperation, competition, and conflict. Prerequisite: graduate standing or consent of instructor.

**E281 Wastewater Treatment (4).** Presents current concepts in wastewater treatment. Some lectures given by State Department of Public Health and regional water quality control board officials and individuals from local water districts. Goal is to integrate wastewater treatment technology with water pollution policy. Prerequisite: graduate standing or consent of instructor.

**E282 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.

**E283 Environmental Health and Quality (4).** Concepts and principles of environmental health. Focuses on industrial hygiene, water and air quality, noise pollution, and environmental carcinogens. Discusses theory and implementation practices through review of legislative measures and enforcement procedures. Examines social and biological interactions surrounding each topic. Prerequisite: graduate standing or consent of instructor.

**E285 Topics in Environmental Health (4).** Each quarter a topic of importance to the field of environmental health is covered. Topics include environmental chemistry, geochemistry, soil science, environmental microbiology, and air or water chemistry. Prerequisite: graduate standing or consent of instructor.

**E286 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.

**E289 Environmental Design Research Practicum (4).** Provides an intensive field research experience in environmental psychology. Overviews basic theory and methods of environmental assessment. The latter portion of the course involves consultation with professional designers and subsequent post-occupancy evaluation of an existing setting. Prerequisite: graduate standing or consent of instructor.

**E293 Lead in the Environment and Society (4).** The social ecology of lead use and presence in subsistence 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 standing or consent of instructor.

**E294 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: graduate standing or consent of instructor.

## Graduate Courses in Psychology and Social Behavior

**P203 Development of Gender 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. Prerequisite: graduate standing or consent of instructor.

**P204 Adolescence (4).** Considers pubertal and cognitive changes and their social consequences; the family, peer group, school, and cultural contexts in which adolescence is embedded; and selected psychosocial issues including autonomy, identity, health, and well-being. Prerequisite: graduate standing or consent of instructor.

**P205 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. Prerequisite: graduate standing or consent of instructor.

**P206 Social Structure and Social Networks (4).** Presents the structural perspective in studying social behavior, focusing on social network analysis. Introduces basic principles of structural sociology, basic concepts of network analysis, and major topics within the field. Emphasizes ego-center networks versus whole networks. Prerequisite: graduate standing.

**P207 Self-Serving Illusions and Well-Being (4).** Reviews theory and research on positive illusions such as inflated self-esteem, exaggerated internal control, and unrealistic optimism. Psychological functions of positive illusions and the implications of such illusions for mental and physical health and well-being are examined. Prerequisites: graduate standing or consent of instructor.

**P209A-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: graduate standing or consent of instructor.

**P210 Community Psychology (4).** Describes the historical development of community psychology and various models for its practice. 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. Prerequisite: graduate standing or consent of instructor.

**P211 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.

**P213 Issues in Social Intervention (4).** Covers issues in assessment and design of social interventions. 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. Prerequisite: graduate standing or consent of instructor.

**P216 Preventive Medicine (8).** Introduces basic preventive medicine subjects. Demonstrates the approach to recognizing causal associations of disease. The main approaches are both descriptive and experimental, and are applied on populations using the disciplines of biostatistics, epidemiology, health administration, and occupational medicine. Prerequisite: graduate standing or consent of instructor.

**P218 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.

**P219 Learning and the Control of Behavior (4).** Covers principles and theories of classical and operant conditioning from laboratory experiments and demonstrates the extensions of such studies into more clinical settings. Reviews criticisms of learning theory applications. Prerequisite: graduate standing or consent of instructor.

**P220 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. Prerequisite: graduate standing or consent of instructor.

**P221 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.

**P223 Cross-Cultural Developmental Psychology (4).** Examines human development in diverse cultures (e.g., Asian, American, and African). Cultural diversity within the U.S. and acculturation of various ethnic groups also discussed. Topics include parenting, family relations, language and cognition, schooling and academic achievement, and morality. Prerequisite: graduate standing or consent of instructor.

**P225 Late Adulthood and Aging (4).** Examines sociocultural and environmental influences on the social roles, behavior, and personal adjustment of middle-aged and older adults. 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.

**P226 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. Prerequisite: graduate standing or consent of instructor.

**P227 Social Behavior (4).** Focuses on a single problem area, investigated from a development perspective. Intensive discussion of developmental processes is accompanied by individual or small group projects addressing specific research problems. The problem area is announced each year. Prerequisite: graduate standing or consent of instructor.

**P229 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. Prerequisite: graduate standing or consent of instructor.

**P230 Adulthood (4).** Focuses on early and middle adulthood. Theoretical perspectives and methodological issues in research on adulthood; the impact of major role-related experiences (e.g., spouse, parent, worker) on development and well-being; continuity and change in cognitive abilities, personality, and identity. Prerequisite: graduate standing or consent of instructor.

**P231 Psychosocial Dimensions of Chronic Illness (4).** Examines social, psychological, and economic consequences of chronic disease; specific emphasis to be announced each year. Covers treatment approaches, lifestyle modifications, health care delivery, psychosocial problems, funding, and research. Prerequisite: graduate standing or consent of instructor.

**P233 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.

**P234 Childhood (4).** Examines the 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. Prerequisite: graduate standing or consent of instructor.

**P236 Issues in Human Development (4).** 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. Prerequisite: Psychology and Social Behavior P220, graduate standing, or consent of instructor. Formerly P236A-B.

**P237 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. Prerequisite: graduate standing or consent of instructor.

**P244 Personality Assessment (4).** Examines the nature of personality as it influences assessment approaches. Discusses adequacy criteria for personality assessment and introduces some current approaches to personality assessment. Addresses applications to student research and practice needs and interests. Prerequisite: graduate standing.

**P248 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.

**P250 Emotion, Reasoning, and Memory (4).** Examines research and theory on emotion from the perspective of cognitive psychology. Topics include the effects of emotions on attention, memory, and problem solving; the relations between emotional and cognitive development, flash-bulb memories of intense emotional experiences; eyewitness testimony. Prerequisite: graduate standing or consent of instructor.

**P258 Health Psychology (4).** Interdisciplinary exploration of emerging fields of health psychology and behavioral medicine. Topics: role of stress in the development and treatment of medical problems; sociocognitive determinants of health and illness; interpersonal health transactions; behavioral approaches to medical problems such as diabetes, obesity, hypertension. Prerequisite: graduate standing or consent of instructor.

**P262 Interpersonal Processes and Health (4).** Examines traditions of research linking interpersonal processes to emotional or physical health. Topics include: role of social support in ameliorating stress, effects of social control on health-compromising behaviors, adverse effects of social relationships on health, causes of deficient social relationships. Prerequisite: graduate standing or consent of instructor.

**P267 Human Stress and the Environment as Stressor (4).** Examines sources of stress from biological, psychological, social, and physical environments, with respect to their impact on personal health, behavior, and functions of social systems. Stress is presented as a multidimensional concept that can profitably be studied by an ecological analysis of determinants and outcomes. Prerequisite: graduate standing or consent of instructor.

**P268 Coping with Stressful Life Events (4).** Explores how individuals cope with serious life crises (e.g., illness, bereavement), life transitions, and daily stressors. Considers how such events impact on people's cognitions, emotions, and health, and the role of others in the coping process. Prerequisite: graduate standing or consent of instructor.

**P269A-B Research in Environmental Psychology (4).** Two-quarter sequence focusing on critical discussion and analysis of on-going research in environmental psychology being conducted by faculty, graduate students, and postdoctoral fellows. Off-campus researchers present to the group on occasion. Prerequisite: graduate standing or consent of instructor. Same as Environmental Analysis and Design E269A-B and Urban and Regional Planning U269A-B.

**P273 Biobehavioral Aspects of Health and Illness (4).** Examines the behavior-physiology interactions of some major bodily systems: the nervous, cardiovascular, gastrointestinal, and endocrine systems. Analysis of normal and abnormal states of these systems as they relate to tissue injury, disease, and rehabilitation. Prerequisite: graduate standing or consent of instructor.

**P277 Child Health Psychology (4).** 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. Prerequisite: graduate standing or consent of instructor.

**P278 Research on Divorce (4).** Focuses on psychological impact of divorce and child custodial arrangements on parents and children, viewed in the broader context of society, including economic implications and societal changes accompanying the increased divorce rate. Students participate in an empirical study of divorced families. Prerequisite: graduate standing or consent of instructor.

**P287 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.

**P294A-B-C Research Directions in Psychology and Social Behavior (2-2-2) F, W, S.** Introduces students to the current research of faculty, graduate students, and visitors to the Department of Psychology and Social Behavior. Includes examination of contemporary research issues and controversies, as well as issues related to students' development as professionals. Satisfactory/Unsatisfactory only. Prerequisite: consent of instructor.

## Graduate Courses in Urban and Regional Planning

**U202 History of Urban Planning (4).** Introduction to the historical roots and fundamental perspectives of urban and regional planning. Exploration of the significant historical phases and personalities which have shaped the profession. The roles and responsibilities, the limitations and potential, of urban planning. Prerequisite: graduate standing.

**U206 Microeconomic Analysis for Urban Planning (4).** Provides students with a working knowledge of basic microeconomic concepts. Emphasizes applications related to urban planning and policy analysis. Topics covered include demand analysis, firm behavior, market structure, public goods, externalities, and the role of information in markets. Prerequisite: consent of instructor.

**U207 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. Formerly Social Ecology 207.

**U208A-B Advanced Research Methodology for Planning (4-4).** Provides in-depth training in research methods enabling students to conduct and critically evaluate research on planning and environmental design. Topics include research design, measurement, scaling, survey sampling and construction, observational and other unobtrusive methods, and ethical and philosophical issues. Course must be taken as a two-quarter sequence. In progress grading. Prerequisites: graduate standing and consent of instructor.

**U211 City Building: Urban Design in Theory and Practice (4).** Acquaints students with vocabulary, history, theories, process, and trends in urban design. The local environment is used as a resource and a laboratory, providing a context for understanding urban design practices and products in Southern California and beyond. Prerequisite: graduate standing and consent of instructor.

**U212 Metropolitan Growth and Transportation Policy (4).** Examines the role of transportation in the growth of cities. An economic analysis of cities and transportation is presented. Specific transportation topics covered include

land use impacts, traffic congestion, pollution, and the analysis of new projects. Prerequisites: graduate standing and consent of instructor.

**U214 Quantitative Analysis for Planners (4).** Introduces students to the basic statistical concepts used to address issues of public concern. Familiarizes students with the information needed to recognize good analysis and prepares them to organize and interpret quantitative inquiries. Prerequisite: graduate standing.

**U215 Analytical Methods for Planning (4).** Emphasizes the development of analytical techniques proven useful in the fields of management and administration. Topics include multiple regression, cost-benefit analysis and discounting, decision trees, and other techniques useful for the purposes of community analysis and planning. Prerequisite: graduate standing.

**U217 Poverty and Social Policy (4).** Provides an overview of contemporary American poverty and related social debates. Emphasis is on discussing and evaluating urban policies aimed at reducing poverty. Prerequisite: graduate standing or consent of instructor. Formerly Social Ecology U215.

**U222 Water Policy (4).** Policy-oriented approach to social science research on water supply/demand management. Water pricing, privatization and finance issues, markets for water transfers between regions and among competing uses, environmental and sanitation considerations, water and poverty, planning for infrastructure investment. Prerequisite: consent of instructor.

**U223 Regional Analysis (4).** Major concepts and techniques of regional analysis, with applications for urban and regional planning and public policy-making. Definition of regions, processes of economic change, regional structure, location of activities, and analysis of selected policy issues. Emphasis on practical applications. Prerequisite: graduate standing or consent of instructor. Formerly Social Ecology 223.

**U229 Communities and Health (4).** Increasingly, communities rather than individuals are seen as the locus of change for making communities healthier. Reviews different theoretical approaches, analyzes programs in the U.S. and abroad, and undertakes a critical evaluation of their success. Prerequisites: graduate standing and consent of instructor.

**U235 Mobile Sources of Air Pollution (4).** Offers an interdisciplinary perspective of a major health and public policy concern focusing on the linkage between transportation and air quality. Perspectives addressed include urban planning, environmental sciences, engineering, law and public administration, economics, and public policy. Prerequisite: graduate standing or consent of instructor.

**U236 Contemporary American Urban Design: Understanding and Challenging the Status Quo (4).** Provides an overview of the current condition of urban design in the United States. Topics covered include the academic environment, the retail environment, multi- and single-family residential environments, the office environment, and new urban design tools. Prerequisite: graduate standing or consent of instructor.

**U242 Regional Development Theory (4).** Regional economic development concepts and studies, with applications for urban and regional planning, and public policy-making. Roles and performance of economic sectors, technological innovation, and communications in the process of development. Analysis of regional development policies and programs. Prerequisite: graduate standing or consent of instructor. Formerly Social Ecology 242.

**U243 State and Local Public Finance (4).** Examines and critiques current trends in how state and local governments do, and should, finance their activities. Attention to property and sales taxes, development fees, special assessment districts, the measurement of public service demand, privatization trends, and intergovernmental fiscal reform. Prerequisite: graduate standing.

**U244 Growth Management (4).** Examination of the role of public policy in guiding growth and development in urban and suburban environments. Description of a wide-ranging set of growth policies, the rationales underlying their use, controversies and legal constraints, and evaluation of their effectiveness. Prerequisite: graduate standing.

**U246 Housing Demography (4).** Examines recent trends in population demographics and housing market behavior, focusing on the living conditions of selected migrant, ethnic, and income groups in California. Describes and assesses housing market opportunities and experiences in geographic detail, and evaluates public policies. Prerequisites: basic statistics; consent of instructor.

**U250 Analysis of Metropolitan Communities (4).** Introduces methods of statistical analysis for census data and community surveys, for the purposes of testing hypotheses and formulating policies concerning urban, suburban, and regional issues. Prerequisite: graduate standing or consent of instructor.

**U252 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. Formerly Social Ecology 252.

**U253 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. Prerequisite: graduate standing or consent of instructor. Formerly Social Ecology 253.

**U254 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 260. Formerly Social Ecology 254.

**U269A-B Research in Environmental Psychology (4).** Two-quarter sequence focusing on critical discussion and analysis of on-going research in environmental psychology being conducted by faculty, graduate students, and postdoctoral fellows. Off-campus researchers present to the group on occasion. Prerequisite: graduate standing or consent of instructor. Same as Environmental Analysis and Design E269A-B and Psychology and Social Behavior P269A-B.

**U272 Community Surveys (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. Formerly Social Ecology 214.

**U273 Global Urbanization (4).** Examines the spread of cities worldwide in the twentieth century. What are the political and economic causes of this processes? What are the social-cultural, political, economic effects? How is contemporary urbanization linked to global restructuring of other kinds? Same as Social Sciences 254J.

**U274 Seminar on Urban Sociology (4).** Survey of issues in urban sociology. Included are such topics as urbanization, city-hinterland relations, urbanism, metropolitan growth, migration, intra-urban differences and issues, local community, metropolitan organization, power structure, and urban social psychology. Prerequisite: graduate standing or consent of instructor. Formerly Social Ecology 274.

**U275 Special Topics in Urban Planning (4).** Special topics in urban and regional planning are offered from time to time, but not on a regular basis. Course content varies with interest of the instructor. May be repeated for credit as topic varies. Prerequisite: graduate standing or consent of instructor.

**U280A-B Urban Planning Studio (4-4).** Offers a practical, problem-solving approach that involves students in varied planning projects. Projects expose students to data gathering, analysis, graphic presentation, politics, law, citizen participation, report writing, and public speaking. Projects emphasize the surrounding metropolitan area. Prerequisite: graduate standing.

**U281 Community Attitudes and Opposition (4).** Focuses on community attitudes: structure of attitudes, sources of variation, and links to behavior. Of particular interest is the NIMBY (Not-In-My-Back-Yard) syndrome and other forms of community opposition. Prerequisites: graduate standing and consent of instructor.

**U282 Theoretical Foundations of Planning (4).** Overview of theories which have contributed to the development of contemporary urban planning; theories covered include rationality, advocacy, economics, structuralism, and postmodernism; critiques of these theories; connections between theory and practice; the future of urban planning. Prerequisites: Social Ecology U202; graduate standing and consent of instructor.

**U288 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 sciences projects launched in the community. Prerequisites: graduate standing or consent of instructor. Formerly E288.

**U298 Directed Studies in Urban Planning (4).** Prerequisite: graduate standing; consent of instructor. May be taken for credit two times.

**U299 Independent Study in Urban Planning (4).** Prerequisite: graduate standing; consent of instructor. May be taken for credit two times.

# SCHOOL OF SOCIAL SCIENCES

William R. Schonfeld, **Dean**

Social Sciences II

Undergraduate Counseling: (714) 824-6803

Graduate Counseling: (714) 824-5924

World Wide Web: <http://www.socsci.uci.edu/>

## Faculty

William H. Batchelder, Ph.D. Stanford University, *Professor of Cognitive Sciences*

Duran Bell, Ph.D. University of California, Berkeley, *Professor of Economics and Anthropology*

Bruce Bennett, Ph.D. Columbia University, *Professor of Mathematics and Cognitive Sciences*

Bruce Berg, Ph.D. Indiana University, *Assistant Professor of Cognitive Sciences*

Victoria Bernal, Ph.D. Northwestern University, *Associate Professor of Anthropology*

James S. Boster, Ph.D. University of California, Berkeley, *Associate Professor of Anthropology*

John P. Boyd, Ph.D. University of Michigan, *Professor of Mathematical Anthropology*

Myron L. Braunstein, Ph.D. University of Michigan, *Professor of Psychology*

David Brownstone, Ph.D. University of California, Berkeley, *Associate Professor of Economics and Social Ecology*

Michael L. Burton, Ph.D. Stanford University, *Professor of Anthropology*

Michael Butler, J.F., Society of Fellows, Harvard University, *Professor Emeritus of Social Sciences and Director of the Farm School*

Robert W. Byde, Ph.D. University of California, Irvine, *Lecturer in Cognitive Sciences*

Teresa Caldeira, Ph.D. University of California, Berkeley, *Assistant Professor of Anthropology*

Francesca M. Cancian, Ph.D. Harvard University, *Chair of the Department of Sociology and Professor of Sociology*

Frank Cancian, Ph.D. Harvard University, *Professor of Anthropology*

Leo R. Chávez, Ph.D. Stanford University, *Chair of the Department of Anthropology and Professor of Anthropology*

Lisa Cheng, Ph.D. Massachusetts Institute of Technology, *Assistant Professor of Linguistics and Economics*

Soo Hong Chew, Ph.D. University of British Columbia, *Professor of Economics and Management*

Carol M. Cicerone, Ph.D. University of Michigan, *Professor of Psychology*

Linda Cohen, Ph.D. California Institute of Technology, *Professor of Economics*

Benjamin N. Colby, Ph.D. Harvard University, *Professor Emeritus of Anthropology*

Thomas N. Cornsweet, Ph.D. Brown University, *Professor Emeritus of Psychology*

Michel Crozier, Docteur en Droit, University of Paris and University of Lille, and Docteur d'Etat, University of Paris, *Professor of Political Science and Sociology*

Russell Dalton, Ph.D. University of Michigan, *Chair of the Department of Politics and Society and Professor of Political Science*

James N. Danziger, Ph.D. Stanford University, *Dean of Undergraduate Education and Professor of Political Science*

Arthur S. DeVany, Ph.D. University of California, Los Angeles, *Professor of Economics*

John DiNardo, Ph.D. Princeton University, *Assistant Professor of Economics*

Barbara A. Doshier, Ph.D. University of Oregon, *Professor of Psychology*

Michael D'Zmura, Ph.D. Harvard University, *Associate Professor of Cognitive Sciences*

David Easton, Ph.D. Harvard University, *UCI Distinguished Professor Emeritus of Political Science*

Harry Eckstein, Ph.D. Harvard University, *UCI Distinguished Professor Emeritus of Political Science*

Jonathon E. Ericson, Ph.D. University of California, Los Angeles, *Professor of Social Ecology and Social Sciences*

Jean-Claude Falmagne, Ph.D. University of Brussels, *Professor of Cognitive Sciences*

James Ferguson, Ph.D. Harvard University, *Associate Professor of Anthropology*

Raul Fernandez, Ph.D. Claremont Graduate School, *Professor of Social Sciences*

Gordon J. Fielding, Ph.D. University of California, Los Angeles, *Professor Emeritus of Social Sciences*

James J. Flink, Ph.D. University of Pennsylvania, *Professor Emeritus of Social Sciences*

Linton Freeman, Ph.D. Northwestern University, *Professor Emeritus of Sociology*

Sue Freeman, Ph.D. University of California, Irvine, *Lecturer in Anthropology and Sociology*

Creel Froman, Ph.D. Northwestern University, *Professor of Political Science*

Naoki Fukui, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Linguistics*

Paula Garb, Ph.D. U.S.S.R. Academy of Sciences, *Lecturer in Social Sciences and Global Peace and Conflict Studies*

L. Manuel García y Griego, Ph.D. University of California, Los Angeles, *Assistant Professor of Political Science*

Jeffrey M. Garcilazo, Ph.D. University of California, Santa Barbara, *Assistant Professor of Chicano/Latino Studies, School of Social Sciences*

Robert Garfias, Ph.D. University of California, Los Angeles, *Professor of Anthropology*

Michelle Garfinkel, Ph.D. Brown University, *Associate Professor of Economics*

Amihai Glazer, Ph.D. Yale University, *Chair of the Department of Economics and Professor of Economics*

Gilbert Gonzalez, Ph.D. University of California, Los Angeles, *Professor of Social Sciences*

Richard H. Granger, Ph.D. Yale University, *Professor of Information and Computer Science and of Cognitive Sciences*

Susan Greenhalgh, Ph.D. Columbia University, *Associate Professor of Anthropology*

Bernard N. Grofman, Ph.D. University of Chicago, *Professor of Political Science and Social Psychology*

Frank Haight, Ph.D. University of New Zealand, *Adjunct Professor of Economics*

Richard X. Hanson, Ph.D. University of California, Los Angeles, *Lecturer in Economics*

Donald Hoffman, Ph.D. Massachusetts Institute of Technology, *Professor of Psychology and of Information and Computer Science*

Lawrence A. Howard, Ph.D. University of California, Irvine, *Lecturer in Social Sciences*

C.-T. James Huang, Ph.D. Massachusetts Institute of Technology, *Chair of the Department of Linguistics and Professor of Linguistics*

Tarow Indow, Ph.D. Keio University, *Professor Emeritus of Psychology*

Helen Ingram, Ph.D. Columbia University, *Professor of Social Ecology and of Politics and Society, and Drew, Chace, and Erin Warrington Chair in the Social Ecology of Peace and International Cooperation*

Geoffrey J. Iverson, Ph.D. New York University, *Professor of Psychology*

John Johnston, Ph.D. University of Wales, *Professor Emeritus of Economics*

Joseph G. Jorgensen, Ph.D. Indiana University, *Professor of Social Sciences*

Sheen T. Kassouf, Ph.D. Columbia University, *Professor Emeritus of Economics*

Mary-Louise Kean, Ph.D. Massachusetts Institute of Technology, *Professor of Cognitive Sciences and Linguistics*

George Kent, Ph.D. University of California, Berkeley, *Professor Emeritus of Social Sciences*

Mary Ritchie Key, Ph.D. University of Texas, *Professor Emerita of Linguistics*

Claire J. Kim, Ph.D. Yale University, *Acting Assistant Professor of Political Science*

Jerome Kirk, Ph.D. The Johns Hopkins University, *Professor Emeritus of Sociology*

Daniel Klein, Ph.D. New York University, *Assistant Professor of Economics*

David LaBerge, Ph.D. Stanford University, *Professor of Psychology*

Utpal Lahiri, Ph.D. Massachusetts Institute of Technology, *Assistant Professor of Linguistics*

Charles Lave, Ph.D. Stanford University, *Faculty Assistant to the Chancellor, Director of Transportation Science, and Professor of Economics*



- Jaewoo Lee, Ph.D. Massachusetts Institute of Technology, *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*
- David M. Lilien, Ph.D. Massachusetts Institute of Technology, *Professor of Economics*
- John M. Liu, Ph.D. University of California, Los Angeles, *Associate Director of Asian American Studies and Associate Professor of Social Sciences*
- Christine Lofgren, Ph.D. University of California, Irvine, *Lecturer in Cognitive Sciences*
- R. Duncan Luce, Ph.D. Massachusetts Institute of Technology, *Director of the Institute for Mathematical Behavioral Sciences and UCI Distinguished Professor Emeritus of Psychology*
- Gary S. Lynch, Ph.D. Princeton University, *Professor of Biological Sciences, Information and Computer Science, and Cognitive Sciences*
- Craig MacAndrew, Ph.D. University of Chicago, *Professor Emeritus of Psychology*
- Liisa Malkki, Ph.D. Harvard University, *Assistant Professor of Anthropology*
- 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, *Professor of Linguistics*
- Martin McGuire, Ph.D. Harvard University, *Professor of Economics and Management, and Clifford and Elaine Heinz Chair in the Economics and Public Policy of Peace*
- Marshall Medoff, Ph.D. University of California, Berkeley, *Lecturer in Economics*
- Duane Metzger, Ph.D. University of Chicago, *Professor Emeritus of Anthropology and Social Sciences*
- Louis Mirón, Ph.D. Tulane University, *Associate Professor of Education and Social Sciences and Director of Chicano/Latino Studies*
- Kristen R. Monroe, Ph.D. University of Chicago, *Professor of Political Science*
- Patrick Morgan, Ph.D. Yale University, *Director of Global Peace and Conflict Studies, Professor of Political Science, and Thomas T. and Elizabeth C. Tierney Chair in Peace Studies*
- Nancy Naples, Ph.D. City University of New York, *Assistant Professor of Sociology*
- 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*
- Nicholas R. Novello, Ph.D. University of California, Irvine, *Lecturer in Social Sciences*
- Jack W. Peltason, Ph.D. Princeton University, *Professor of Political Science*
- Mark P. Petracca, Ph.D. University of Chicago, *Associate Professor of Political Science*
- Henry N. Pontell, Ph.D. State University of New York, Stony Brook, *Chair of the Department of Criminology, Law and Society and Professor of Social Ecology and Social Sciences*
- M. Ross Quillian, Ph.D. Carnegie-Mellon University, *Professor Emeritus of Political Science*
- A. Kimball Romney, Ph.D. Harvard University, *Professor Emeritus of Anthropology*
- Shawn Rosenberg, M. Litt. University of Oxford, *Associate Professor of Political Science and Social Psychology*
- Wayne Sandholtz, Ph.D. University of California, Berkeley, *Associate Professor of Political Science*
- Michael J. Scavio, Ph.D. University of Iowa, *Lecturer in Cognitive 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*
- Paul Shirey, Ph.D. University of California, Irvine, *Lecturer in Economics*
- Stergios Skaperdas, Ph.D. The John Hopkins University, *Assistant Professor of Economics*
- Kenneth A. Small, Ph.D. University of California, Berkeley, *Professor of Economics*
- David A. Smith, Ph.D. University of North Carolina, Chapel Hill, *Associate Professor of Sociology and Social Ecology*
- Etel Solingen, Ph.D. University of California, Los Angeles, *Associate Professor of Political Science*
- Dorothy Solinger, Ph.D. Stanford University, *Professor of Political Science*
- George Sperling, Ph.D. Harvard University, *UCI Distinguished Professor of Psychology*
- Judith Stepan-Norris, Ph.D. University of California, Los Angeles, *Assistant Professor of Sociology*
- Alec Stone, Ph.D. University of Washington, *Associate Professor of Political Science*
- Rein Taagepera, Ph.D. University of Delaware, *Professor Emeritus of Political Science*
- Gary Thom, Ph.D. Yale University, *Professor Emeritus of Political Science*
- Bernard Tranel, Ph.D. University of California, San Diego, *Professor of Linguistics*
- Judith Treas, Ph.D. University of California, Los Angeles, *Professor of Sociology*
- Carole J. Uhlaner, Ph.D. Harvard University, *Associate Professor of Political Science*
- Maria Uribe-Echevarria, Ph.D. University of Connecticut, *Assistant Professor of Linguistics*
- Steven K. Vogel, Ph.D. University of California, Berkeley, *Assistant Professor of Political Science*
- Howard B. Waitzkin, M.D., Ph.D. Harvard University, *Professor of Medicine, Social Sciences, and Social Ecology*
- Roger Walsh, M.B.B.S., Ph.D. University of Queensland (Australia), *Professor of Psychiatry and Human Behavior, Philosophy, and Anthropology*
- W.C. Watt, Ph.D. University of Pennsylvania, *Professor Emeritus of Cognitive Sciences*
- Martin P. Wattenberg, Ph.D. University of Michigan, *Professor of Political Science*
- Norman Weinberger, Ph.D. Case Western Reserve University, *Professor of Biological Sciences and Cognitive Sciences*
- Christian Werner, Ph.D. The Free University of Berlin, *Professor Emeritus of Economics*
- Douglas R. White, Ph.D. University of Minnesota, *Professor of Anthropology*
- Joseph L. White, Ph.D. Michigan State University, *Professor Emeritus of Social Sciences*
- Murray Wolfson, Ph.D. University of Wisconsin, *Adjunct Professor of Economics*
- Charles E. Wright, Ph.D. University of Michigan, *Assistant Professor of Cognitive Sciences*
- John I. Yellott, Jr., Ph.D. Stanford University, *Chair of the Department of Cognitive Sciences and Professor of Psychology*
- Moira Yip, Ph.D. Massachusetts Institute of Technology, *Faculty Associate to the Dean and Professor of Linguistics*

## OVERVIEW

Undergraduate and graduate education in the School of Social Sciences at UCI represents a commitment to modern social science. The classic subject areas of anthropology, economics, geography, linguistics, political science, psychology, and sociology are included in the School's educational programs, but these programs go well beyond the traditional disciplines and can be characterized by the following emphases.

First, the faculty recognizes the value of systematic empirical observation and quantitative analysis in the study of human behavior. Developments in computer science and in mathematics oriented toward the problems of the social sciences, and the refinement of techniques for the observational, experimental, and statistical study of human behavior, have contributed major new elements to social science. Students in the School of Social Sciences will become familiar with the mathematical, computational, and statistical tools underlying modern social science.

Second, many of the most interesting questions in the study of human behavior cannot be fixed within the traditional disciplinary boundaries. Some of the new and evolving areas which cross orthodox boundaries are political sociology, public policy, cognitive anthropology, and psycholinguistics. Therefore many courses and course modules are built around 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.

## 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.

The **Social Science Academic Resource Center** provides personal assistance to all Social Science students on research opportunities, off-campus internships, and graduate and professional programs. In addition, the Resource Center offers counseling on postbaccalaureate programs, provides Internet access and instruction to students, and disseminates information on scholarships, workshops, and other services through a quarterly newsletter, the *Social Sciences Hotsheet*.

## 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 <sup>1</sup> .....	B.A., M.A., Ph.D.
Economics .....	B.A., M.A., Ph.D.
Geography <sup>2</sup> .....	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.
Transportation Science <sup>3</sup> .....	M.S., Ph.D.

Within the Ph.D. in Social Science are five optional concentrations: *Anthropology*, supervised by faculty in the Department of Anthropology.

*Linguistics*, supervised by faculty in the Department of Linguistics. *Mathematical Behavioral Science*, supervised by an interdisciplinary group of faculty.

*Social Networks*, supervised by the faculty in Anthropology and Sociology.

*Social Relations*, supervised by the faculty in Anthropology and Sociology.

<sup>1</sup> The degree programs in Comparative Culture are not available at this time; however, multicultural/international courses are offered under Social Science.

<sup>2</sup> The major of Geography is not available at this time; however, courses in Geography are offered under Social Science.

<sup>3</sup> Supervised by the Interdepartmental Group in Transportation Science.

## 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. Other important factors are considered (see page 55).

## Undergraduate Program

### PLANNING A PROGRAM OF STUDY

Since there are many alternative ways to plan a program, some of which may require careful attention to specific major requirements, students should consult with the School of Social Sciences Undergraduate Counseling Office to design an appropriate program of study.

Students who elect one of the School majors in their freshman year might begin by taking the one-digit courses required by their major and one of the mathematics sequences listed under Part A of the School requirements. It is a good idea to take these courses early since they include fundamental concepts that will be widely applicable in more advanced courses. In addition, the lower-division writing requirement of the 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) Neither major program may be the Social Science major.
- (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 technology, and introductory social science requirements. The mathematics and computer 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, 1P, or 21, or Social Science 3A, 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

The major in Social Science, with the specialization in Social Studies, is specifically designed for prospective K-12 teachers. Students planning to seek State of California teaching credentials in the social sciences should discuss their undergraduate curriculum plans with the School's academic counselors.

## Mathematics and Social Sciences

The mathematics requirement stems from the nature of modern social science. The concepts and terms of mathematics, statistics, and computers are an important part of the social scientist's vocabulary. Basic knowledge of these tools is necessary to an understanding of current literature in the social sciences, to the analysis of data, and to an intelligent use of social science models. Each candidate for a degree in the School of Social Sciences is expected to have a basic knowledge of probability, statistics, and computing. In addition, for students who are preparing for graduate school in an area of social science, it will be important to supplement the minimal mathematics requirements with additional courses related to mathematics and social science methodology. The particular courses which would be recommended are not specified here, however, since they are highly dependent on the major emphasis of the student. Students who are preparing for graduate study should consult their advisors to determine a program of study which will give them the research skills necessary for successful graduate work.

## REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57-61.

### School Requirements

A. Familiarity with basic mathematical, computational, and statistical tools underlying modern social sciences. This requirement is met by passing a three-course sequence in mathematics (Anthropology 10A-B-C, 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). Computer education is essential for a complete social science education. This requirement can be satisfied by passing Information and Computer Science 1A, 1P, or 21, or Social Science 3A. Departments may have preferences for specific courses; see your major department for acceptable courses. 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. 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.

## TRANSFER STUDENTS

**Freshmen and Sophomores:** Students transferring to UCI as freshmen or sophomores will fulfill the regular requirements of the four-year program either through work at UCI or through transfer credit for comparable work elsewhere.

**Juniors:** Following review by the School of Social Sciences, it may be determined that junior transfer students electing to major in one of the School's degree programs, who have good records at other accredited colleges and universities, have satisfied School requirement B and the University requirements. However, all transfer students must fulfill the upper-division writing breadth requirement (category I) while at UCI. Students anticipating transfer to UCI in their junior year should plan their curriculum so as to anticipate the special mathematics requirement (School requirement A). Every effort will be made to accommodate individual variation in background, provided students are prepared to commit themselves to intensive work in areas of deficiency. Ordinarily, the typical two-year program for junior transfers is simply the last two years of the regular four-year program, except that students who have not satisfied the mathematics requirements of the School should plan to do so in the junior year and must do so before graduation.

**Seniors:** Students wishing to graduate with a degree in the School by transferring to UCI in their senior year should plan their work carefully to ensure that the requirements can be met in one year of residence. In general, differences between the program at UCI and programs elsewhere make senior transfers difficult.

## 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 host universities and colleges throughout the world. Additional information is available in the Center for International Education section.

### Interdisciplinary Minors

A variety of interdisciplinary minors are available to all UCI students. A brief description of each program follows; detailed information is included in the Interdisciplinary Studies section of the *Catalogue*.

**The minor in African-American Studies** is an interdisciplinary program which offers undergraduate students an opportunity to study those societies and cultures established by the people of the African diaspora and to investigate the African-American experience from a variety of disciplinary perspectives and theoretical approaches.

**The minor in Asian American Studies** is an interdisciplinary curriculum which examines the historical and contemporary experiences of Asians after their arrival in the United States and seeks to provide an awareness of the history, culture (e.g., literary and creative art accomplishments), psychology, and social organization of Asian American communities.

**The minor in Chicano/Latino Studies** is an interdisciplinary curriculum designed to provide an awareness, knowledge, and appreciation of the language, history, culture, literature, sociology, anthropology, politics, social ecology, health, medicine, and creative (art, dance, film, drama, music) accomplishments in the Chicano/Latino communities.

**The minor in Global Peace and Conflict Studies** is an interdisciplinary curriculum which addresses the problem of international violence; the threat of global war; and paths to world-wide cooperation in building a secure, prosperous, and democratic future.

**The minor in Global Sustainability** trains students to understand the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on this planet.

**The minor in the History and Philosophy of Science** explores how science is actually done and how it has influenced history, and is concerned with determining what science and mathematics are, accounting for their apparent successes, and resolving problems of philosophical interest that arise in the sciences.

**The minor in Latin American Studies** is an interdisciplinary curriculum designed to develop in students an awareness, knowledge, and appreciation of Latin American issues in the areas of language, history, culture, literary studies, sociology, anthropology, political science, health, folk medicine, and creative (art, dance, film, drama, music) accomplishments.

**The minor in Native American Studies** focuses on history, culture, religion, and the environment. The three core courses serve as an introduction to the Native American experience from the perspective of different historical periods and frameworks of analysis.

**The minor in Religious Studies** focuses on the comparative study of religions in various cultural settings around the world and seeks to provide a wide-ranging academic understanding and knowledge of the religious experience in society.

**The minor in Women's Studies** offers a curriculum drawing from the humanities, social sciences, and the arts to examine contributions of women from different backgrounds to culture and society and to explore women's and men's lives in the context of changing gender relations.

### 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 careers at all levels of government and in private firms. Their solid grounding in contemporary social science methods and their familiarity with a broad spectrum of social scientific thinking gives them an excellent foundation for the pursuit of further training in graduate and professional programs.

The Career and Life Planning 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 and Life Planning Center section.

### Graduate Program

The School of Social Sciences offers graduate training in the following areas: Anthropology, leading to the Ph.D. in Social Science; Cognitive Sciences, leading to the Ph.D. in Psychology; 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 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 Economics or Social Science may be conferred upon students in progress toward the Ph.D. degree.

A graduate program leading to the M.S. and Ph.D. degrees in Transportation Science is supervised by an interdepartmental faculty group. Information is available in the Interdisciplinary Studies section of the *Catalogue*.

The graduate program in Comparative Culture is not available to new students at this time.

### ADMISSION

Potential graduate students should apply by January 15 to receive fullest consideration for financial aid. Applicants should indicate the title of the degree sought (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 Anthropology, 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.

## DEPARTMENT OF ANTHROPOLOGY

4223 Social Sciences II; (714) 824-7602  
Leo R. Chávez, **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.

## Undergraduate Program

### REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57-61.

**School Requirements:** See page 325.

#### 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), no more than one course from any of the following topical areas in anthropology:
  - (1) Kinship and Social Structure (Anthropology 121A, 121B, 121D, 121G, 121H)
  - (2) Economic and Ecological Anthropology (Anthropology 121J, 125A, 125B, 125M, 125P-Q, 125X, 125Y)
  - (3) Psychological, Cognitive, and Medical Anthropology (Anthropology 132A, 132B, 134A, 134D, 134E)
  - (4) Religion and Cultural Expression (Anthropology 135A, 135H, 138M, 138O, 138P, 138Q, 138R)
  - (5) Political Anthropology (Anthropology 121G, 136A, 136G, 136J, 136K, 136M)
- 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 Social Science 70C.

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.

The faculty encourages Anthropology majors or minors to study abroad and experience a different culture while making progress toward degree objectives. The Center for International Education, which includes the Education Abroad Program (EAP) and the International Opportunities Program (IOP), assists students in taking advantage of many worldwide opportunities. For example, EAP offers excellent opportunities to study anthropology at many universities abroad and courses taken for departmental requirement C, D, and E would be excellent choices to take. Study abroad also can provide opportunities for cross-cultural experience, field research, and foreign language training. See the Center for International Education section of the *Catalogue* for additional information.

### Honors Program in Anthropology

The Honors Program in Anthropology is designed to allow undergraduates to pursue field research and write an honors thesis on topics of their choice under the guidance of Department of Anthropology faculty members. Research projects typically involve a combination of library research, exploratory ethnographic interviews, participant observation, and systematic data collection and analysis. The program is open to all senior Anthropology majors with a grade point average of 3.3 or better overall, with 3.5 in Anthropology courses (at least five courses). Successful completion of the Honors Program and the honors thesis satisfies the upper-division writing requirement.

Although course work for the Honors Program does not start until the senior year, it is highly recommended that during the spring quarter of the junior year, students find a professor willing to serve as their research project advisor on the basis of a mutually acceptable abstract that indicates the goal and significance of their project. If extensive research is to be undertaken at this time, students enroll in Anthropology 199.

During the fall quarter of the senior year, students enroll in Anthropology H190A and write a proposal describing their research question, the relevant background literature, and the method of data collection and analysis. Field work for the project may begin during this quarter.

In the winter quarter of the senior year, students begin or continue ethnographic field research by enrolling in Anthropology H190B. Field research typically combines exploratory field research with fixed format data collection methods.

In the spring of the senior year, students enroll in Anthropology H191 and complete a senior honor thesis that is typically 40 to 80 pages long. Honor theses are read and evaluated by the advisor and a second faculty member chosen by the chair of the undergraduate committee in consultation with the advisor.

### 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), no more than one from any of the following topical areas in anthropology:
  - (1) Kinship and Social Structure (Anthropology 121A, 121B, 121D, 121G, 121H)
  - (2) Economic and Ecological Anthropology (Anthropology 121J, 125A, 125B, 125M, 125P-Q, 125X, 125Y)
  - (3) Psychological, Cognitive, and Medical Anthropology (Anthropology 132A, 132B, 134A, 134D, 134E)

- (4) Religion and Cultural Expression (Anthropology 135A, 135H, 138M, 138O, 138P, 138Q, 138R)
- (5) Political Anthropology (Anthropology 121G, 136A, 136G, 136J, 136K, 136M)

- 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 Social Sciences 70C.

## Graduate Program

### Participating Faculty

- Duran Bell: Economics, economic anthropology
- Victoria Bernal: Economic development, peasants, gender, political economy; Africa, muslim societies
- James S. Boster: Cognitive anthropology, intracultural variation, ethnopsychology, ethnobiology, quantitative methods, social networks
- John P. Boyd: Kinship, social networks, mathematical anthropology
- Michael Burton: Economic anthropology, ecological anthropology, psychological anthropology, gender; Africa, Micronesia
- Teresa Caldeira: Urban violence; spatial segregation and urban changes in multicultural societies; citizenship, individual rights, and conceptions of the body; racism; gender, critical urban studies, and contemporary developments in social theory; Brazil
- Frank Cancian: Economic anthropology, inequality, peasants; Mexico
- Leo R. Chávez: International migration, Latin American immigrants, medical anthropology, transnational communities
- Benjamin Colby: Culture theory and cultural pathology, content analysis, psychological anthropology, cognition, narrative structures, psychoneuroimmunology; Japan, Mesoamerica, women's health and well-being in Orange County
- James Ferguson: Political economy, "development," migration and culture; Southern Africa
- Robert Garfias: Ethnomusicology, ethnicity
- Susan Greenhalgh: Political economy, transnational studies, feminism/gender, politics of reproduction, critical demography, disciplinarity, China, Taiwan, Pacific Rim
- Karen Leonard: Social history of India, caste, ethnicity and gender, Asian-Americans in the United States
- Liisa Malkki: Historical anthropology, nations and nationalism, refugees and exile, ethnicity and transnational identity; East and Central Africa
- A. Kimball Romney: Experimental and psychological anthropology, quantitative and cognitive anthropology
- Douglas White: Cross-cultural research, mathematical anthropology, social networks, longitudinal analysis, development and social change

### Affiliated Faculty

- Chungmoo Choi: Modern Korean culture, colonialism, popular culture and culture theory, anthropology
- Jonathon E. Ericson: Archaeological chemistry, environmental quality and health, earth sciences
- Paula Garb: Anthropology of conflict and conflict resolution, ethnic and environmental conflict in the former U.S.S.R.
- Joseph G. Jorgensen: Mathematical comparative ethnology; Native American language and culture; explanations, theory, and method in social inquiry
- Arthur J. Rubel: Medical anthropology, peasants

The Department of Anthropology offers a program of study leading to a Ph.D. in Social Sciences with a concentration in Anthropology. The program focuses on social and cultural anthropology, with emphases in political economy and economic anthropology, cognitive anthropology, ethnography, and medical anthropology, and has multiple faculty interested in ethnicity, gender, historical anthropology, international migration, and social networks. The program also provides rigorous methodological training, with special strengths in quantitative and formal analysis and in the methodology of ethnographic fieldwork. The Department is committed to exploring new and innovative approaches to culture and society in a pluralistic and intellectually open academic environment. Program faculty take diverse theoretical and methodological approaches to a variety of substantive issues. They are united,

however, in a willingness to question taken-for-granted theoretical premises and analytic frames, and to engage in good-faith intellectual dialogue about alternative models and approaches.

### ADMISSION

Students are admitted to the concentration based on their application materials and evidence of scholarly potential, including grade point average, GRE scores, and letters of recommendation.

### REQUIREMENTS

Students must complete a one-year Proseminar in Anthropology during their first year and one course in Anthropological Fieldwork during their second year. In addition, students are required to complete two quarters of Statistics, one course in Research Design, and six elective courses in Anthropology, which are selected in consultation with their advisor and which normally cover a coherent area of specialization within the field. All course work must be completed before a student is advanced to candidacy.

At the end of the first year, students must pass a formal evaluation which is made by the Department on the basis of (1) the first-year course work and (2) examinations to be taken as part of the Proseminar. Students should advance to candidacy by the end of the third year; the advancement to candidacy examination is based on a research proposal, a review of relevant literature, and an annotated bibliography. The fourth (and, in many cases, some or all of the fifth) year is normally devoted to extended anthropological fieldwork. The sixth year (in some cases, also part of the fifth) is devoted to writing the dissertation, in close consultation with the advisor.

### Social Networks and Social Relations

The Department of Anthropology administers two additional graduate programs, Social Networks and Social Relations, in conjunction with the Department of Sociology; see pages 364-365.

### Feminist Studies Emphasis

A graduate emphasis in Feminist Studies also is available. Refer to the Women's Studies section of the *Catalogue* for information.

## 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. (V)

**20A People, Cultures, and Environmental Sustainability (4).** An anthropological consideration of global environmental sustainability from the perspective of human cultures and communities. Causes and consequences of population growth, natural resource management, environmental law, environmental ethics. Case studies emphasize tropical rain forests, arid lands of Africa and North America. Same as Environmental Analysis and Design E20.

**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 archeological database.

**60A Japan and America: Culture and Society (4).** A comparison of values and behavior in Japanese and American culture. (VII-B)

**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.

**85A Cultures in Collision: Indian-White Relations Since Columbus (4).** An introductory survey of topics such as: indigenous religious belief and socio-political organization, stereotypic "images," intermarriage, the fur trade, Native leaders, warfare, and contemporary issues. Slides, films, and trips to local museums enhance student learning. Same as Sociology 65. (VII-A)

**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. (VII-B)

**121B Sociobiology (4).** Investigates the interacting between culture and biology. Each one affects the other in a process known as coevolution. Prerequisite: satisfactory completion of the lower-division writing requirement.

**121D Cross-Cultural Studies of Gender (4).** Familiarizes students with the diversity of women's experiences around the world. Gender roles and relations are examined within cultural and historical contexts. A central concern is how class, race, and global inequalities interact with women's status. Prerequisite: Anthropology 2A or 2B. Same as Women's Studies 180A. (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.

**121H Social Inequality: Anthropological Perspectives (4).** Social status, power, and economic differences; race, ethnicity, and gender in comparative perspective. Anthropological and sociological studies of us and other people used to increase understanding of the contemporary United States. Prerequisite: one course in Anthropology, Economics, Political Science, or Sociology. Same as Sociology 165A. (VII-B)

**122S Sociolinguistics (4).** Sociolinguistic varieties of language examined from different points of view: geographical, temporal, and cultural. Prerequisite: Linguistics 3. Same as Women's Studies 186A 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. (VII-B)

**125B Ecological Anthropology (4).** Studies relationships between human communities and their natural environments. The role of environment in shaping culture; effects of extreme environments on human biology and social organization; anthropologist's role in studying global environmental

problems, e.g., African famine, destruction of tropical rain forests. Prerequisite: Anthropology 2A, 2B, or 2C. Same as Environmental Analysis and Design E116. (VII-B)

**125M Community Change and Transnational Development (4).** Focuses on community, national, and international perspectives on findings and applications of anthropological and economic research concerning development and social change. Anthropological critiques of development processes, development agencies, and development economics.

**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. (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. Same as Women's Studies 180D. (VII-A)

**125Y South Asian American Experience (4).** Examines and compares the experiences of South Asian immigrants in the U.S. over time. Looks at the economic, political, and social positions of the immigrants, with special emphasis on religious changes and the changes in the second and later generations.

**126G Marriage and Bridewealth (4).** The rules by which children are positioned within a social system and by which men claim rights over women vary widely among societies. Analyzes these rules on the basis of a formal theory of wealth allocations between and among corporate groups that challenge neoclassical models. Prerequisites: Anthropology 2A and Economics 20A-B-C, or consent of instructor. Same as Economics 152M.

**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. (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

**132A Psychological Anthropology (4).** Cultural differences and similarities in personality and behavior. Child-rearing practices and consequent adult personality characteristics, biocultural aspects of child development and attachment, evolutionary models of culture and behavior, politically linked personality, cognitive anthropology, psychology of narrative forms, comparative national character studies. Prerequisite: Anthropology 2A or Psychology 7A or Psychology 9A-B-C. Same as Psychology 173A and Women's Studies 180C.

**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.

**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.

**134E Ways of Healing (4).** Designed to explore and discover the diverse ways humans have devised to heal themselves. The theoretical premise is that social ties are an essential ingredient to successful healing and, indeed, protection against the onset of illness.

**135A Religion and Social Order (4).** An anthropological exploration of religious belief and practices in diverse social and historical contexts. Emphasis placed on selected non-western traditions of the sacred, and on issues of power, ritual, moral order, and social transformation. (VII-B)

**135H Religion in South Asia (4).** Introduction to South Asian civilization looking not only at Hinduism and Islam but at the socioeconomic and political systems which have supported religions traditions. (VII-B)

**136A Nationalism and Ethnicity in the Contemporary World (4).** An exploration of the concepts of identity, culture, ethnicity, race, and nation through ethnographic cases, with a view to asking larger questions: How do people create nativeness and foreignness? How does "culture" get worked into contemporary racisms and nationalisms?

**136G Colonialism and Gender (4).** An anthropological enquiry into the ways colonial relations of power have been structured and gendered throughout the world, and to what effect. Examines the social locations of men and women in the everyday exercises of colonial and imperial power. Same as Women's Studies 180G.

**136J Gender and Cultural Identity (4).** Explores how anthropological traditions of studying symbolic classification might be connected with contemporary issues involving the political and cultural classification of people along the crosscutting axes of gender, race, ethnicity, culture, and nationality. Same as Women's Studies 180H.

**136K The Woman and the Body (4).** Probes culture and politics of the female body in late twentieth-century American life. Focusing on "feminine beauty," examines diverse notions of beauty, bodily practices, and body politics embraced by American women of different classes, ethnicities, and sexualities. Same as Women's Studies 180L. (VII-A)

**136M Refugees and Exile (4).** An anthropological exploration of exile and displacement. Examines how large population displacements occur, what is usually done about refugees and why, and how the lived experiences of exile influence displaced people's senses of identity, home, and history.

**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.

**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.

**138O Music and Society in the Ottoman Sphere (4).** The unique character of Ottoman society created a musical culture which spread throughout much of Eastern Europe and into much of the Arabic speaking world. This influence is still clearly manifest in these regions as well as in Turkey. (VII-B)

**138P Music of Asia (4).** A survey of the major music traditions of Asia and a consideration of the broad cultural and historical patterns which brought them about. Discusses the interaction and development of regional forms and communicates something of the value systems underlying these forms. (VII-B)

**138Q Latino Music: A View of Its Diversity and Strength (4).** A survey of the musics of the many Latin cultures of the Americas including Mexico, Central and South America, as well as the Caribbean, and of those many Latin cultures which thrive and survive in the United States. (VII-B)

**138R Cross-Cultural Parameters of Popular Music (4).** A consideration of popular music in the U.S. and abroad. How is pop defined and what does its evolution in other cultures tell us about our own pop music? The course will consider how the various cultures within the U.S. fit into the pop music scene, how they modify it today, and how they have in the past. (VII-A)

**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.

**142A Chronological Dating Techniques in Environmental Reconstruction (4).** Radiocarbon dating as a common technique having wide applications for a variety of fields. Surveys a number of dating techniques used to establish a

chronological framework. Particular emphasis on applications for environmental reconstruction and archeology. Prerequisite: Environmental Analysis and Design E8. Same as Environmental Analysis and Design E163.

**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 in their research designs. Prerequisites: Environmental Analysis and Design E8 and 10 or equivalent; previous or concurrent enrollment in Anthropology 143LA; consent of instructor; senior standing preferred. Same as Environmental Analysis and Design E142.

**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: Environmental Analysis and Design E8 and previous or concurrent enrollment in Anthropology 143A; consent of instructor; senior standing preferred. Same as Environmental Analysis and Design E142L.

**149 Special Topics in Archaeology (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 and Women's Studies 180F. (VII-B)

**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. Prerequisite: School of Social Science majors only; seniors preferred. (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. (VII-B)

**162B Indian North America (4).** A survey of indigenous peoples in North America: American Indians, Alaska Natives, First Nations, Native Americans. Tribal populations and geographic distributions, political and social organization, sovereignty, self-determination, intergovernmental relations; cultural continuity and change; management, preservation, development of environments/resources.

**163A Peoples of the Pacific (4).** The cultural history and recent developments among the Pacific peoples of Polynesia, Micronesia, Melanesia, New Guinea, and Australia. Same as Women's Studies 180E. (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 Women's Studies 180B. (VII-B)

**163H State and Society in Contemporary China (4).** Explores the social relations and cultures of Chinese societies and their embeddedness in changing political and economic regimes. Emphasis is on transformations associated with the construction and partial dismantling of socialism on the Chinese mainland, but attention is also given to the Chinese diaspora. (VII-B)

**163K Korean Society and Culture (4).** Introductory background to the social and cultural forces that affect the lives of the Koreans, including those in the United States. Considers traditional values and contemporary issues within a historical framework. Same as East Asian Languages and Literatures 130 and Sociology 175A. (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.

**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. (VII-B)

**164L Ethnography and Politics in Southern Africa (4).** Explores the way that ethnographic accounts have described political processes in southern Africa (including such things as migrant labor and rural transformation, urbanization, ethnicity, and political resistance), and how such accounts have been shaped by their own political contexts. Prerequisite: consent of instructor. (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 Data Collection and Analysis 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.

**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. Prerequisite: satisfaction of the lower-division writing requirement. (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.

**176A Exploring Society Through Photography (4).** Students explore society through presentation, interpretation, and discussion of their own photographs. A few common exercises at the beginning of the quarter are followed by individual projects. Photography as social observation and the relation of photographs in an essay are stressed. Prerequisite: basic darkroom techniques. Same as Social Sciences 182A and Sociology 114A.

**177A Laboratory in Sociocultural Anthropology (4).** Student research projects designed for this class may range from anthropological data collection (interviews, kinship data, field notes, cognitive tasks) and their analysis to secondary analysis (cross-cultural data, network data, on-line 1980 and 1990 U.S. census data, text databases), and simulation or programming. Prerequisite: consent of instructor.

**179 Special Topics: Methods and Formal Representations (1 to 4) F, W, S.** Prerequisites vary. May be repeated for credit as topic varies.

## SPECIAL COURSES

**180A Anthropology Majors Seminar (4-4-4).** A course in anthropological theory designed especially for majors in Anthropology. Different issues are considered in different years. Prerequisite: Anthropology major only or consent of instructor.

**190 Senior Thesis (4).** May be taken a total of three times. Prerequisite: consent of instructor.

**H190A Honors Research Workshop (4) F.** Students articulate the goals and significance of their research projects. Written work consists of an eight- to fifteen-page research proposal, due by quarter's end, describing the research question, the relevant literature, and methods of data collection and analysis. Prerequisites: open only to students in the Honors Program in Anthropology; consent of instructor.

**H190B Honors Field Research (4) W.** Students begin or continue ethnographic field research that combines exploratory field research (e.g., participant-observation, interviews, study of archival and documentary materials) with fixed format data collection methods (e.g., standardized interviews, behavioral observations). Prerequisite: Anthropology H190A; consent of instructor.

**H191 Honors Senior Thesis (4) S.** Student drafts a senior honor thesis (typically) with the following sections: problem statement, literature review, ethnographic background, description of the methods, results, and conclusions. Prerequisites: Anthropology H190A, H190B; satisfaction of the lower-division writing requirement; consent of instructor.

**197 Field Study (1 to 4).** Prerequisite: consent of instructor. May be repeated for credit as topic varies.

**198 Group Directed Study (1 to 4).** Prerequisite: consent of instructor. May be repeated for credit as topic varies.

**199 Independent Study (1 to 4).** Prerequisite: consent of instructor. May be repeated for credit as topic varies.

## GRADUATE

**202A-B-C Proseminar in Anthropology (4-4-4).** Year-long intensive introduction to the history of anthropological thought and reading in classical and contemporary ethnography for first-year graduate students. Prerequisite: graduate standing or consent of instructor.

**208A Anthropological Fieldwork Methodology (4).** A survey of anthropological fieldwork methodology techniques, including attention to contemporary analysis of fieldwork. Prerequisite: graduate standing or consent of instructor.

**210A-B Graduate Statistics I, II (4-4).** Statistics with emphasis on applications in sociology and anthropology. Examines exploratory uses of statistical tools in these fields as well as univariate, bivariate, and multivariate applications in the context of the general linear model. Prerequisites: graduate standing, consent of instructor. Same as Social Sciences 255M-N.

**220A Analysis of Quantitative Field Data (4).** The uses of quantitative data by field anthropologists and sociologists, including found data (e.g., government censuses and archives), and data from interviews, field censuses, surveys, and systematic elicitation. Hands-on work with existing data. Very elementary statistics and basic computer literacy assumed. Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 256L.

**221A Family and Life History (4).** Interdisciplinary and comparative work in family and life history. Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 253A.

**222A 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. Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 201G, 241C, and 256A.

**223A-B Research Design I, II (4-4).** Data collection, organization, and analysis in ethnographic or quasi-experimental settings, including interviewing, participant-observation, behavior observation, and questionnaires. Research design issues include sampling, longitudinal research, and comparative research. Emphasis on the integration of qualitative and quantitative data. Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 255A-B.

**224A-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. Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 256D-E.

**230A Anthropology and History (4).** An examination of the complex, long-standing relationship between anthropology and history. Themes include: history, culture, and colonialism; history and the power to represent; nostalgia and the uses of the past in struggles over "national history." Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 251A.

**231A Cognitive Anthropology (4).** Cognitive Anthropology studies how people classify, reason, and make decisions in a cultural context. Explores how cultural knowledge is organized, how members of society come to collective understandings of the world, and what variation reveals about how individuals learn. Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 252D.

**232A 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. Same as Social Sciences 252O.

**233A Kinship Structures (4).** The kinship systems of the world offer many interesting structures for algebraic analysis, such as the Australian marriage class systems using the theory of permutation groups, and the Crow-Omaha using semigroups. Other models will also be considered. Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 242E and Social Sciences 253C.

**234A Kinship, Households, and Gender (4).** Anthropological theories of kinship and social organization. Households as arenas for social reproduction and economic action. Gender theory in anthropology. The effects of colonization, migration, and economic development upon gender, family, and house-

holds. Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 253D.

**234B Gender and Globalization (4).** Teases out gender implications of transformations in global culture and political economy. By examining processes such as globalization of production and investment, spread of religious fundamentalisms, and extension of mass media throughout the world, maps out terrain for future ethnographic and theoretical work. Same as Social Sciences 254K.

**235A Urban Anthropology and International Migration (4).** Interdisciplinary, but favors anthropological perspectives to examine the nature of urban society, theoretical explanations for international migration, 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. Same as Social Sciences 254A.

**236A 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. Same as Social Sciences 254B.

**237A Anthropology of Power Relations (4).** Examines contemporary anthropological research on power relations in societies and cultures experiencing change as a result of increasing incorporation into a world capitalist system. Topics include: ethnicity, gender, migration, hegemony, and resistance. Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 254C.

**238A Social Inequality: Anthropological Perspectives (4).** Comparative social inequality over the range of issues to which anthropologists have contributed. Topics include: egalitarian societies, local effects of international political economy, ethnicity, gender, caste, and inequality in peasant and urban industrial populations. Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 254D.

**240A Economic Anthropology (4).** Classic and contemporary theory in economic anthropology. Case studies from Latin America (primarily Mexico and the Andes), Africa, and the Pacific. Substantive topics include non-market exchange, markets and marketplaces, households, gender, management of common property (fisheries, pastoral lands, forests), labor, development, and change. Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 254E.

**241A Women and Development (4).** Explores questions about the dynamics of gender in processes of economic change, and the related problem of the production of knowledge about "women" and "development," with particular attention to Third World feminist critiques. Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 253G.

**242A The Politics of Ethnography (4).** Explores the way that ethnographies are linked to wider contexts within which they are produced. Through examination of recent critiques of ethnographic writing, and a series of cases, shows how ethnography is bound up with the politics of representation. Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 254F.

**243A Cultural Studies and Ethnography (4).** Examines, from the standpoint of anthropology, areas of recent innovation in "cultural studies," including studies of popular culture, media, consumption, and sub-cultures. Selected theoretical approaches in these areas are brought into a dialogue with anthropological and ethnographic approaches and methods. Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 252F.

**244A The Anthropology of Commodities (4).** Explores anthropological perspectives on commodities and commodity exchange. Begins with anthropological accounts of exchange in pre-capitalist societies, and moves on to explore: commodification and capitalism; consumer society and the semiotics of consumption; and the implications of contemporary transnational commodity flows. Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 254G.

**245A Seminar in Political Anthropology (4).** Explores anthropological approaches to politics. Covers a range of issues and topics, including: theories of culture, power, and hegemony; approaches to colonial and post-colonial relations of global inequality; and ethnographic approaches to the modern state. Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 254H.

**246A Studies in the National Order of Things (4).** Examines how "the nation" has come to appear as an inevitable unit of the contemporary political and cultural order and how it shapes orders of knowledge. Themes: nation and gender; nationalism and colonialism; culture and citizenship; violence and racism. Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 254I.

**247A Structuralism and Post-Structuralism (4).** Traces recent theoretical discussions and arguments over the philosophical and historical "subject" from structuralist decenterings toward the characteristically "post-structuralist" contemporary concern with the historical and political constitution of subjectivities and subject positions. Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 252G.

**289 Special Topics in Anthropology (4).** Special topics vary from quarter to quarter. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

**290 Dissertation Research (4 to 12).** Prerequisite: graduate standing or consent of instructor. May be repeated for credit.

**299 Independent Study (4).** Prerequisite: graduate standing or consent of instructor. May be repeated for credit.

## DEPARTMENT OF COGNITIVE SCIENCES

3215 Social Sciences II; (714) 824-7569  
John I. Yellott, 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.

### Undergraduate Program

Students should be aware that psychology courses are offered in several different departments and programs. Students interested in general psychology including the areas of development, clinical, perception, learning, memory, and cognitive processes are advised to consult the course listings here in the Department of Cognitive Sciences section. These courses are designed to provide students with a strong foundation in general psychology. Students interested in other areas of psychology are advised to consult the course listings in the School of Social Ecology section.

In anticipation that the number of students who are qualified to elect Psychology as a major will exceed the number of positions available, students applying for admission for fall 1997 should be sure to file their application before November 30, 1996.

**Continuing-Student Applicants:** Students who were not admitted to the Psychology major upon their admission to the University may apply for entry into the major during the first five weeks of any quarter after their freshman year. Applications must be filed in the School of Social Sciences Undergraduate Counseling Office. To be considered for admission into the Psychology major, students must have completed the following: (a) the lower-division writing requirement and (b) the requirements of two additional campus breadth categories. Students applying to the major should have an overall grade point average of at least 2.7. NOTE: Acceptance into the major is not guaranteed. In the event that more applications are received than can be accommodated, applicants may be subject to screening beyond these minimum criteria.

**Excellence in Psychological Research:** Psychology majors doing independent research under Psychology 199 may be eligible for participation in the Excellence in Psychological Research program. Participants have the opportunity to present their research papers published in a peer-reviewed student journal. Guidelines for the program are available from the Department of Cognitive Sciences office.

## REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57-61.

**School Requirements:** See page 325.

### Departmental Requirements for the Major in Psychology

School requirements must be met and must include 18 courses (70 units) as specified below:

- A. Psychology 9A-B-C.
- B. Two introductory courses (eight units) in the social sciences chosen from Anthropology 2A or 2B, Economics 1, Linguistics 3, Political Science 6A, 6B, or 6C, Sociology 1.
- C. A one-quarter course and laboratory in experimental psychology or research methods selected from 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). NOTE: Psychology 110E (Introduction to Experimental Psychology) cannot be used to satisfy core course requirements.
- E. Seven additional courses (four or more units each) with emphasis in psychology, distributed as follows:
  - (1) No more than one of the seven may be lower-division. Psychology 7A may not be used to fulfill this requirement.
  - (2) Three of the upper-division courses used to satisfy requirements D and E must be taken from one of the following modules: Psychology 110-119 (Research Methodologies), 120-129 (General Psychology), 130-139 (Perception and Sensory Processes), 140-149 and 150-159 (Learning and Cognition and Semiotics and Language combined), and 170-179 (Interdisciplinary Studies).
  - (3) Certain courses offered in the School of Biological Sciences and the School of Social Ecology may be used in partial satisfaction of this requirement. 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 1A-B-C in satisfaction of the natural sciences portion of the breadth requirement (Category II). Furthermore, it is strongly recommended that students who intend to pursue postbaccalaureate work in psychology take the sequence Psychology 112A-B-C or Psychology 110E, 112D, 112LD. Most psychology graduate programs require statistics (which, at UCI, may be satisfied by taking Social Sciences 10A-B-C, Psychology 10A-B-C, or Social Sciences 100A-B-C), but some require calculus (which, at UCI, may be satisfied by taking Mathematics 2A-B-C).

### Honors Program in Psychology

The two-year 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 fall quarter of the Honors Seminar in Psychology (H101A). As seniors, following successful completion of these junior-year requirements, Psychology honors students are enrolled in the Honors Seminar in Psychology (H101B-C) in the winter and spring quarters. Participants in the honors program are expected to complete 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 with Honors in Psychology, a student must successfully complete the requirements for the B.A. degree in Psychology with an overall grade point average of 3.2 and a grade point average of at least 3.5 in Psychology courses. In addition, Honors students must successfully complete a senior honors thesis as part of the senior-year course work.

### 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) no more than one of which is a lower-division course.
- D. In addition, the School mathematics and computer science requirement (School requirement A) must be satisfied.

## Graduate Program

### Participating Faculty

William Batchelder: Mathematical models of learning and memory, mathematical psychology, and measurement  
 Bruce Berg: Psychoacoustics of complex sounds, auditory attention  
 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  
 Barbara Doshier: Memory, information processing, perception  
 Michael D'Zmura: Visual perception, color vision, attention and image understanding  
 Jean-Claude Falmagne: Mathematical behavioral sciences  
 Donald Hoffman: 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  
 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  
 George Sperling: Vision, perception, information processing  
 W.C. Watt: Cognitive semiotics  
 Charles E. Wright: Motor control, motor learning  
 John I. Yellott, Jr.: Mathematical psychology and visual perception

The Department of Cognitive Sciences offers a program of study leading to the Ph.D. in Psychology. The faculty are interested in human cognition, perception, cognitive psychology, and psycholinguistics. They 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, semiotics, 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 (Psychology 203A, 203B, 203C). The other is a proseminar sequence covering areas such as learning, memory, perception, and linguistics (Psychology 202A-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 (Psychology 201A-B-C) during all quarters in residence prior to advancement to candidacy.

In addition, students must take at least six more courses prior to advancement to candidacy. These courses must be taken from at least three of the following five modules: Foundations (Psychology 200-209); Human Cognition (Psychology 210-229); Methodologies and Models (Psychology 230-249); Human Performance (Psychology 250-269); and Sensation and Perception (Psychology 270-289).

Each student is expected to carry out theoretical/empirical research during the first two years. By the end of the second year, each student should have completed a research project of a scope and nature that is potentially publishable in a 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.

## 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. No credit is given for Psychology 7A if it is taken concurrently with or after 9A, 9B, or 9C. (III)

**9A-B-C Psychology Fundamentals (4-4-4) F, W, S.** A year-long sequence designed to provide freshman Psychology majors with an in-depth survey of general psychology. Topics include biological bases of behavior, sensation, perception, cognition, development, personality, psychopathology, and social psychology. Prerequisite: freshman Psychology major; consent of instructor. No credit is given for Psychology 7A if it is taken concurrently with or after 9A, 9B, or 9C. (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. (V)

**11E 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. Critical understanding of key issues. Although designed for freshmen, beneficial for all students. (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 or 9A-B-C. Psychology 21A and Psychology and Social Behavior P102 may not both be taken for credit. (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 or 9A-B-C.

**23A Principles of Applied Psychology (4).** Introduction to the understanding of human functioning through cognitive and behavioral analysis and application.

**24A Life-Span Development (4).** Combines developmental and clinical psychology concepts to explore major life transition stages and adjustment challenges faced by individuals across the life span. Introductions to personality development and coping adaptively with these changes are covered. Prerequisite: Psychology 7A or 9A-B-C.

**46A Introduction to Human Memory (4).** Covers the core concepts of modern research and theorizing about human memory, including structural subdivisions (e.g., perceptual memory, short-term memory, long-term memory), different measures of memory (e.g., recall, reorganization), and some practical applications of memory research (e.g., mnemonics). Prerequisite: Psychology 7A or 9A-B-C. Psychology 46A may not be taken for credit after Psychology 146A. (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. (III)

**56L Acquisition of Language (4).** What children say, what they mean, and what they understand. Theories about the learning of language by one-, two-, and three-year olds. Comparison of kinds of data on which these theories are based. Same as Linguistics 51. (III)

**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. (III)

**89 Special Topics in Lower-Division Psychology (4).** Prerequisites vary. May be repeated for credit as topic varies.

## UPPER DIVISION

**H101A-B-C Honors Seminar in Psychology I, II, III (4-4-4).** Focuses on the research activities and honors thesis research projects of each student and on the research of various Cognitive Sciences faculty. Students discuss their research interests in the early and later stages of their projects. Research projects and write-ups are required. Restricted to students in the Honors Program in Psychology.

## RESEARCH METHODS

**110E 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. Prerequisites: Psychology 7A or 9A-B-C; Psychology 10A-B or any other 10A-B series in the School of Social Sciences (10B may be taken concurrently), or equivalent. Students cannot take Psychology 110E for credit after they have taken Psychology H111A or 112A.

**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 or 9A-B-C; 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. Students cannot take Psychology 110E for credit after they have taken Psychology H111A or 112A.

**H111LA Honors Experimental Psychology Laboratory (2) F.** Corequisite: Psychology H111A.

**H111B Honors Advanced Experimental Psychology (4) W.** Design and analysis of multivalent, factorial, and correlational studies. Students prepare proposals for independent research. Corequisite: Psychology H111LB. Prerequisite: Psychology H111A or Psychology 112A. Open only to students in the Honors Program in Psychology or by consent of instructor.

**H111LB Honors Advanced Experimental Psychology Laboratory (2) W.** Corequisite: Psychology H111B.

**H111C Honors Research in Experimental Psychology (4) S.** Each student conducts a research project in experimental psychology. The projects are discussed in a seminar format. Written reports on each project are submitted at the end of the quarter. Prerequisite: Psychology H111B or 112B. Open only to students in the Honors Program in Psychology or by consent of instructor.

**112A Experimental Psychology (4) F.** Emphasis on design of experiments and analysis of results. Experiments are conducted in laboratory sections. Corequisite: Psychology 112LA. Prerequisites: Psychology 7A or 9A-B-C; 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. Students cannot take Psychology 110E for credit after they have taken Psychology H111A or 112A.

**112LA Experimental Psychology Laboratory (2) F.** Corequisite: Psychology 112A.

**112B Advanced Experimental Psychology (4) W.** Design and analysis of multivalent, factorial, and correlational studies. Students prepare proposals for independent research. Corequisite: Psychology 112LB. Prerequisite: Psychology 112A, 112LA.

**112LB Advanced Experimental Psychology Laboratory (2) W.** Corequisite: Psychology 112B.

**112C Research in Experimental Psychology (4) S.** Each student conducts a research project in experimental psychology. The projects are discussed in a seminar format. Written reports on each project are submitted at the end of the quarter. Prerequisite: Psychology 112B, 112LB.

**112D Observational Research Methods in Psychology (4) W.** 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 110E; Psychology 10A-B-C, any other 10A-B-C series in the School

of Social Sciences. Mathematics 2A-B-C recommended. Statistics may not be taken concurrently. Restricted to Psychology majors with upper-division standing only.

**112LD Observational Research Methods in Psychology Laboratory (2).** Corequisite: Psychology 112D.

**113T Introduction to Psychological Tests and Measurements (4).** Principles of psychological measurement, including elementary psychophysics, psychometrics, test theory, and the measurement of abilities, attitudes, traits, and interests. Reliability and validity of psychological measurements. Prerequisites: Psychology 7A or 9A-B-C; Psychology 10A or any other 10A course in the School of Social Sciences or equivalent.

**114A Informal and Formal Reasoning (4).** Examines human reasoning, focusing on scientific argument and elementary logic. Involves the translation of informal arguments from everyday language into logic. Specific feedback allows students to pace themselves through this computer-assisted course. Weekly informal classroom discussions.

**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 110E or 112A.

**119 Special Topics in Research Methodologies (1 to 4).** Prerequisites vary. May be repeated for credit as topic varies.

## GENERAL PSYCHOLOGY

**120A Abnormal Psychology (4).** Introduction to psychopathology and behavioral deviations, and the concepts of theories regarding these conditions. Prerequisite: Psychology 7A or 9A-B-C. Psychology 120A and Psychology and Social Behavior P105 may not both be taken for credit.

**120D Developmental Psychology (4).** A general introduction to the study of the physical, intellectual, social, and emotional development of the child from birth to adulthood. Prerequisites: Psychology 7A or 9A-B-C. Psychology 120D and Psychology and Social Behavior P101 may not both be taken for credit.

**120H History of Psychology (4).** A history of the development of various schools and systems of psychological thought. Prerequisites: Psychology 7A or 9A-B-C.

**120P Personality Theories (4).** A survey of the evolution of personality theory during this century. An overview of major perspectives in the field, with special attention to Freud, Jung, and Adler. Prerequisite: Psychology 7A or 9A-B-C. Psychology 120P and Psychology and Social Behavior P144C may not both be taken for credit.

**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. Open to students in any major.

**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.

**121M Theories of Motivation (4).** Factors affecting the behavioral performance of organisms. A survey of theoretical and empirical approaches to the physiological, psychological, and social factors which generate behavior. Prerequisite: Psychology 7A or 9A-B-C.

**121S Psychology of Sleep and Dreaming (4).** Covers the physiology, neurochemistry, and neuroanatomy associated with sleep, contemporary sleep theory, REM and NREM, phenomenology, sleep disorders, examination of differences between conscious and unconscious cognitive function, the history of sleep and dream theories from ancient time to present day.

**121T A History of Psychoanalytic Thought (4).** A survey of psychoanalytic thought from its origins in shamanistic healing through the discovery of a dynamic unconscious and beyond. Includes psychoanalytic hypotheses, developments, transformations, and influences on various aspects of Western culture and society, including art and literature. Prerequisites: Psychology 7A or 9A-B-C; upper-division standing.

**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.

**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 7A or 9A-B-C. Psychology 130A may not be taken for credit if taken after 131A or 131B.

**131A Vision (4).** Visual perception and the anatomy and physiology of the visual system. Topics include: the retina and the visual pathway; visual sensitivity; color vision; spatial vision; motion perception; and the development of the visual system. Prerequisite: Psychology 9A-B-C; upper-division standing or consent of instructor. Psychology 130A may not be taken for credit if taken after 131A.

**131B Hearing (4).** Auditory perception, the anatomy and physiology of the auditory system, and the physics of sound. Topics include: neural transduction of sound, sensitivity, sound localization, complex sound perception, and hearing loss. Prerequisite: Psychology 9A-B-C; upper-division standing or consent of instructor. Psychology 130A may not be taken for credit if taken after 131B.

**131C Advanced Perception and Sensory Process (4).** A continuation of Psychology 131A and 131B. In-depth study of selected topics, emphasizing the way questions in sensory and perceptual research are formulated and pursued. Prerequisites: Psychology 9A-B-C; Psychology 131A and 131B or consent of instructor.

**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 9A-B-C or consent of instructor.

**133P Advanced Topics in Visual Perception (4).** Topics in vision related to ophthalmology and optometry. Course for students considering a career in eye care. Prerequisite: upper-division standing; Psychology 130A or consent of instructor.

**134A Human Attention (4).** Reviews and discusses methods of research, current data, and current theories in the field of human attention. Prerequisite: Psychology 7A or 9A-B-C.

**134R 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: upper-division standing; Psychology 7A or 9A-B-C; consent of instructor.

**135D 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.

**136M 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.

**136S 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: upper-division standing; Mathematics 2A or equivalent.

**139 Special Topics in Perception and Sensory Processes (4).** Prerequisites vary. May be repeated for credit as topic varies.

## LEARNING AND COGNITION

**140C Cognitive Science (4).** Introduction to investigations of the structure and function of the mind, from viewpoints of computation, neuroscience,

philosophy, and cognitive psychology. Topics include: perception, attention, knowledge representations, learning and memory, action, reasoning, and language. Prerequisites: Psychology 7A or 9A-B-C.

**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 7A or 9A-B-C.

**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. Psychology 141D and Psychology and Social Behavior P120D may not both be taken for credit.

**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. Prerequisite: consent of instructor.

**143D Choice and Decision Models (4).** Introduction to some of the main concepts in the study of individual decision making. The interplay of empirical observation and mathematical theory is emphasized. Prerequisites: elementary mathematical formalism, including sets, relations, functions, and basic concepts of probability. Concurrent with Psychology 212.

**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.

**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 or 9A-B-C.

**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 or 9A-B-C; Psychology 140C or Linguistics 150A; satisfactory completion of the lower-division writing requirement. Same as Linguistics 157. Concurrent with Psychology 215 and Linguistics 257.

**145B Neurobiology of Learning and Memory (4).** Basic issues concerning the nature of behavioral plasticity and information storage and their neural substrates. Prerequisite: Biological Sciences 1C when topic is Brain and Behavior, or Biological Sciences 110, or consent of instructor. Same as Biological Sciences 158.

**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.

**146A Human Memory (4).** Developments in the area of memory; history of memory research; theories of the nature of memory. Visual memory, recognition memory, high-speed scanning, free recall, short-term memory, mnemonics, retrieval, relationship of memory to thinking. Selected theoretical formulations for memory. Prerequisites: Psychology 7A or 9A-B-C. Psychology 46A may not be taken for credit after Psychology 146A.

**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.

**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.

**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.



**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.

**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.

**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. Prerequisite: Linguistics 10. Same as Linguistics 183.

**156B Language and the Brain (4) W.** Analysis of current research on the biological bases of human linguistic capacity. Development, focusing on hemispheric specialization and plasticity; localization of specific linguistic functions in adults, with emphasis on study of aphasia; relation of linguistic capacity to general cognitive capacity, considering research on retardation. Prerequisite: Biological Sciences 1C when topic is Brain and Behavior, or Biological Sciences 110, or consent of instructor. Same as Linguistics 158 and Biological Sciences 160.

**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; politically linked personality; cognitive anthropology; psychology of narrative forms; comparative national character studies. Prerequisite: Psychology 7A or 9A-B-C, or Anthropology 2A. Same as Anthropology 132A and Women's Studies 180C.

**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. (VII-A)

**174B Social Psychology of African-American Families (4).** Social psychological analysis of African-American families from an Afro-centric perspective with examination of historical and contemporary factors which affect their structure and functioning and the psychosocial development of family members. Issues and challenges in the twenty-first century. Same as Women's Studies 181A. (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 development, peer group relationships, sexuality and sex role preference. Analysis of power struggle between adolescent subcultures and institutions of dominant society.

**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 only; one previous course in adolescent psychology.

**174E Psychology of the African-American (4).** Historical overview of the development of Black psychology and the African-American frame of reference. Topics include personality development, psychological assessment, issues in education, Black mental health, and the role of the African-American psychologist in the community. Formerly Comparative Culture 120L. (VII-A)

**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: Psychology 7A or 9A-B-C, or Linguistics 3. Same as Linguistics 152.

**175P Psychology of Language (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 128A.

**178D Deviance (4).** Perspectives on deviance and criminality in behavior, institution, community, and myth. The suitability of contemporary theories of deviant behavior. Open to majors only. Same as Sociology 156 and Criminology, Law and Society J107.

**178N Social Psychology of Networks (4).** Review of network methods used in small group and organizational research. Discussion of social psychological literature relevant to the network study of cognitive social structure, exchange and communication, identity negotiation, and social control. Case study of network datasets exemplifies research issues. Same as Sociology 135.

**179 Special Topics in Interdisciplinary Studies (1 to 4).** Prerequisites vary. May be repeated for credit as topic varies.

**190 Senior Thesis (4-4-4).** In progress grading. Prerequisite: consent of instructor.

**197A-Z Field Study (4).** Prerequisite: consent of instructor. May be repeated for credit as topic varies.

**198A-Z Directed Group Study (1 to 4).** Prerequisite: consent of instructor. May be repeated for credit as topic varies.

**199 Independent Study (1 to 4).** Prerequisite: consent of instructor. Students may enroll in only one 199 per quarter. May be repeated for credit as topic varies.

## GRADUATE

**201A-B-C Cognitive Sciences Research Seminar (1.3-1.3-1.4) F, W, S.** Weekly reports and colloquia by faculty, students, and visitors. Prerequisite: admission to graduate program in Cognitive Sciences or consent of instructor.

**202A-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.

**203A Discrete Mathematics and Probability Taught by Gentle ARIS (4).** A fully computerized, self-paced course presenting the elementary notions of logic, set theory, and probability theory using ARIS (Automated Real-Time Instructional System). Axiomatic logic, post-production systems, Rabin-Scott automata, random variables, including moments and the Chebyshev Inequality. Prerequisite: graduate standing or consent of instructor.

**203B 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.

**203C 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.

**204 Computational Models of Language and Cognition (4).** Introduction to the theory of abstract machines; learnability of families of languages under various conditions of input information and processing capability; computational models of language processes. Prerequisite: graduate standing or consent of instructor.

**211 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: Psychology 202A; graduate standing or consent of instructor.

**212 Choice and Decision Models (4).** An introduction to some of the main concepts in the study of individual decision making. The interplay of empirical observation and mathematical theory is emphasized. Prerequisites:



elementary mathematical formalism, including sets, relations, functions, and basic concepts of probability. Concurrent with Psychology 143D.

**215 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: graduate standing or consent of instructor. Same as Linguistics 257. Concurrent with Psychology 143R and Linguistics 157.

**229 Special Topics in Human Cognition (4).** Current research in brain/behavior relationships, human memory, and learning theory will be presented. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

**231 Introduction to Measurement (4) F.** Investigates when/how specific attributes can be represented numerically or geometrically (measured). Focuses on ordered algebraic systems that have additive and averaging representations; generalization through the concept of scale types. Prerequisite: basic mathematics of set theory; graduate standing or consent of instructor.

**232 Measurement Seminar (4).** Advanced topics of current interest are presented both by faculty and students. Focuses mainly on applications of measurement and meaningfulness concepts to psychophysics and decision making. Prerequisites: graduate standing. Psychology 231 or equivalent.

**233A-B-C 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.

**234A-B Mathematical Models of Cognitive Processes I, II (4-4).** Mathematical models of various cognitive processes developed since 1960, including learning, memory, perception, psycholinguistics, and problem solving. Models are formulated in different mathematical languages: calculus, algebra, logic, probability, and computer. Difficulties in testing and validating models discussed. Prerequisite: graduate standing or consent of instructor.

**249 Special Topics in Methodology and Models (4).** Current research in cognitive sciences methodologies, concepts, and models will be presented. May be repeated for credit as topics vary.

**251 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. Prerequisite: graduate standing or consent of instructor.

**252 Human Response Times (4) S.** Explores conceptual issues concerning response times and response accuracy in information processing models. Focuses on models and methodology; theoretical questions are also addressed. Prerequisites: differential and integral calculus, introductory probability; graduate standing or consent of instructor

**254 Human Information Processing (4).** Detailed introduction to speed-accuracy tradeoff experimental procedures; speed-accuracy tradeoff issues; quantitative modeling of temporal aspects of human information processing. Prerequisite: graduate standing or Honors Program in Psychology undergraduate with consent of instructor.

**269 Special Topics in Human Performance (4).** Current research in the human issue involved with sensation, perception, and cognition. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

**271A, B, C Vision Seminar (1.3, 1.3, 1.4).** Participants, including the vision faculty and all interested graduate students, make research presentations and discuss current publications in the literature. Also serves as a forum for presentations by visiting vision researchers. Satisfactory/Unsatisfactory only. Prerequisite: graduate standing or consent of instructor. Formerly Psychology 271.

**272 Electro-optical Instrumentation Related to the Human Eye (4).** Covers basic principles of the design of electro-optical systems and the relevant parameters of the human visual systems.

**273 Visual Perception (4).** General introduction to visual perception for graduate students. Current research topics emphasized. Prerequisite: graduate standing or consent of instructor.

**274 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.

**276 Psychology of Hearing (4).** Provides background for understanding current research in hearing. Topics include physiological mechanisms, localization, pitch, and models of hearing processes. Special emphasis given to the perception of complex sounds. Prerequisite: graduate standing or consent of instructor.

**289 Special Topics in Sensation and Perception (4).** Current research in the reception and processing of visual and auditory stimuli presented. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

**290 Dissertation Research (4 to 12).** Prerequisites: consent of instructor, graduate standing, psychology major only. May be repeated for credit.

**299 Individual Study (4).** Prerequisites: consent of instructor, graduate standing. May be repeated for credit.

## DEPARTMENT OF ECONOMICS

3223 Social Sciences II; (714) 824-5788

Amihai Glazer, **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.

## Undergraduate Program

In anticipation that the number of students who want to major in Economics will exceed the number of positions available, students applying for admission for fall 1997 should be sure to file their application before November 30, 1996.

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. Such students should apply in the School of Social Sciences Undergraduate Counseling Office. 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.

**Transfer-Student Applicants:** See page 44.

## REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57-61.

**School Requirements:** See page 325.

### 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.

## Graduate Program

### Participating Faculty

Duran Bell: Models of social processes  
 David Brownstone: Econometrics and applied microeconomics  
 Soo Hong Chew: Economics of information and uncertainty, preference theory  
 Linda R. Cohen: Political economy, social choice, government regulation and government policy toward research and development  
 Arthur S. DeVany: Economic theory, industrial organizations  
 John E. DiNardo: Labor economics, development economics, applied economics  
 Gordon J. Fielding: Urban theory and transportation policy  
 Michelle R. Garfinkel: Macroeconomic and monetary theory  
 Amihai Glazer: Public choice, industrial organization  
 John Johnston: Econometrics  
 Sheen T. Kassouf: The theory of stochastic speculative pricing

Daniel Klein: Public economics, game theory  
 Charles A. Lave: Transportation economics  
 Jaewoo Lee: International economics, macroeconomics  
 David M. Lilien: Macroeconomics, labor economics and applied econometrics  
 R. Duncan Luce: Theory of measurement, individual decision theory, response times  
 Julius Margolis: Political economy of national defense and government behavior  
 Martin C. McGuire: Public finance, international trade, economics of peace and security  
 Stergios Skaperdas: Economic theory, game theory  
 Kenneth Small: Urban economics, transportation economics, discrete-choice econometrics, energy  
 Christian Werner: Mathematical geography

### Affiliated Faculty

Dennis Aigner: Statistical and econometric methodology, efficiency estimation  
 Frank Cancian: Anthropology, social stratification, economic anthropology, agriculture, Mexico  
 Paul Feldstein: Health economics  
 Bernard Grofman: Public choice, law and economics, models of collective decision making  
 Carole J. Uhlaner: Comparative political participation, formal models of political behavior

The Department of Economics offers a program of study leading to the Ph.D. in Economics. Drawing upon the School's strong quantitative tradition, it specializes in public choice, transportation economics, urban economics, econometrics, and applied microeconomics. Admission is highly selective and is limited to students whose interests mesh closely with those of the faculty. By requiring a high degree of overlap between faculty and student research interests, the program offers extensive faculty contact within a tutorial framework. Motivated and well-qualified students find the graduate program highly attractive because of its small size and its great flexibility. Self-discipline and an inquiring mind are prerequisites.

### ADMISSION

The deadline for application for admission is January 15 for fall quarter. Students are admitted for winter or spring quarters only under exceptional circumstances. Late applications are considered on a space-available basis. All applicants must take the Graduate Record Exam (GRE) prior to the application deadline. Foreign applicants must also submit Test of English as a Foreign Language (TOEFL) scores.

### 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 field. Students also must enroll for at least four quarters in the graduate colloquium, in which attendance at regular Economics faculty research colloquia is supplemented by discussion of the papers presented and additional reading. Students are encouraged to become conversant with areas of current economic research early in their graduate careers, in order to facilitate a timely transition from meeting course and field requirements to thinking through a dissertation research plan. 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 transportation researchers on the campus, both within the School of Social Sciences, the School of Engineering, the Graduate School of Management, and the School of Social Ecology. Students benefit from association with the Institute of Transportation Studies. 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 Choice Econometrics (Economics 223A), 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 related field such as urban economics, labor economics, industrial organization, or a transportation-related field from outside economics (such as travel demand and flow theory, urban and transportation policy analysis, environmental impacts of transportation, or urban and transportation planning) subject to the approval of the Director of Graduate Studies for Economics; and (3) students must take at least one additional course from a list of designated courses in transportation and related subject areas.

### Concentration in Public Choice

Students can also 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 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.

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 1.5 million volumes, as well as special interlibrary loan arrangements with other University of California libraries. The School of Social Sciences provides a computer laboratory. The Economics Department has a small library with current journals and unpublished working papers from other universities. Students also have access to several campus computers including a Convex C240 mini-super computer. Three Organized Research Units, the Institute of Transportation Studies, the Center for Research on Information Technology and Organizations, and the Institute for Mathematical Behavioral Sciences, provide research opportunities for graduate students.

## Courses in Economics

### 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. (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. (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. (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.

**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.

**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.

**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.

**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).

**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.

**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.

**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.

**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.

**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.

**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.

**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.

**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.

**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.

**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.

**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.

**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.

**144T Mathematical Analysis of 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.

**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.

**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.

**146 Public Policy Issues (4).** An unabashed examination and interpretation of the following areas of public policy: schooling, housing and homelessness, occupational licensing, F.D.A. drug approval, credit bureaus, the U.S. Postal Service, and auto emissions. Heavy reading requirements from recent public-policy literature. Prerequisites: Economics 20A; satisfaction of the lower-division writing requirement.

**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.

**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. (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.

**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.

**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. (VII-B)

**152M Marriage and Bridewealth (4).** The rules by which children are positioned within a social system and by which men claim rights over women vary widely among societies. Analyzes these rules on the basis of a formal theory of wealth allocations between and among corporate groups that challenge neoclassical models. Prerequisites: Anthropology 2A and Economics 20A-B-C, or consent of instructor. Same as Anthropology 126G.

**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. (VII-B)

**155A Economics of the Family (4).** Each student chooses a chapter from Gary Becker's classic book, *A Treatise on the Family* and spends the quarter writing an approximately 25-page paper summarizing and critically evaluating Becker's arguments and evidence. Prerequisite: Economics 100A-B-C; Economics 151A-B-C desirable.

**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.

**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.

**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.

**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.

**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.

**169 Special Topics in Economics in Macroeconomics (4).** Prerequisites vary. May be repeated for credit as topic varies.

**GRADUATE**

**200A-B-C Graduate Colloquium for Economics I, II, III (2-2-2) F, W, S.** Weekly reports and colloquia by faculty, students, and visitors. Supplemented by class discussion of these presentations and other material on current research methodology. Prerequisite: admission to graduate program in Economics or consent of instructor. May be repeated for credit.

**203A Mathematics for Economists (4).** Gives students the mathematical background required for graduate work in economics. Topics covered include multivariate calculus, differential equations, and linear algebra. Prerequisite: graduate standing or consent of instructor.

**205A Research Writing in Economics (4).** For Economic graduate students who are writing their required research paper in an applied field. How to write an original paper in economics, guidance for specific papers. Prerequisite: admission to the graduate program in Economics.

**210-219: GRADUATE ECONOMIC THEORY**

**210A-B-C Microeconomic Theory I, II, III (4-4-4) W, S.** Theoretical microeconomics. Emphasis on the meaning and empirical interpretation of theoretical models. Topics include theory of the firm, theory of the market, theory of the consumer, duality theory, application to econometrics, general equilibrium and welfare economics, uncertainty, game theory. Prerequisite: graduate standing or consent of instructor.

**210D-E-F Macroeconomic Theory I, II, III (4-4-4) F, W, S.** Advanced macroeconomic theory including alternative macroeconomic models, microeconomic foundations of macroeconomics, investment and growth theory, inflation and unemployment, rational expectations and macroeconomic policy, wealth effects, crowding out and fiscal policy, money and interest, open economy models.

**219A-Z Special Topics in Economic Theory (4) F, W, S.** Prerequisites vary. May be repeated for credit.

**220-229: QUANTITATIVE METHODS**

**220A-B-C-D Statistics and Econometrics I, II, III, IV (4-4-4-4).** 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. **220B:** Probability spaces, random variables, random sampling, maximum likelihood estimation, central limit theorems, hypothesis testing. Same as Psychology 203B. **220C-D:** Specification, estimation and testing of econometric models. emphasis on linear simultaneous equations models, and limited dependent-variable models are covered.

**221A-B-C-D Statistics and Econometrics Laboratory I, II, III, IV (2-2-2-2).** Discussion of problems in statistics and econometrics and their relationship to statistical and econometric theory. Instruction in the use of computers for applied econometric work. Concurrent with Economics 220A-B-C-D.

**223A 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: Economics 220A and 220C.

**224A Time Series Econometrics (4).** Econometric analysis of time series data. Moving average and autoregressive series, regression analysis, Box-Jenkins techniques, computational methods, and causality conditions. Prerequisites: Economics 220A, 220C-D.

**229A-Z Special Topics in Quantitative Methods (4).** Prerequisites vary. May be repeated for credit as topics vary.

**230-239: FINANCIAL ECONOMICS**

**231A-B Financial Economics and Markets (4-4).** **231A:** Modern theory of portfolio selection as an application of individual decision making under uncertainty. Implication for equilibrium financial asset-pricing. **231B:** 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.

**239A-Z Special Topics in Financial Economics (4).** Prerequisites vary. May be repeated for credit as topics vary.

**240-249: MICROECONOMICS**

**241A-B Industrial Organization I, II (4-4).** Analysis of the structure and economic performance of markets, and the impact of public policy and their efficiency and equity. Effects of information structure. **241A:** Oligopoly, cartels, mergers, vertical integration, patents, innovation, antitrust, and regulation; **241B:** price flexibility and dispersion, auctions, search and industrial structure, intrafirm organization. Prerequisites: Economics 100B and 203A.

**242A 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 203A.

**243A Game Theory (4).** An introduction to game theory with emphasis on noncooperative games and economic applications. Topics include: properties of Nash equilibrium and its refinement, repeated games, bargaining games, games with incomplete information. Prerequisites: graduate standing or consent of instructor.

**249A-Z Special Topics in Microeconomics (4).** May be repeated for credit as topics vary.

**250-259: HUMAN RESOURCES**

**251A-B Labor Economics I, II (4-4).** Analytic and empirical study of labor markets. Topics 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 203A.

**259A-Z Special Topics in Human Resources (4).** Prerequisites vary. May be repeated for credit as topics vary.

**260-269: MACROECONOMICS**

**261A-B International Trade I, II (4-4).** Covers theoretical models, empirical methods, and policy issues in international trade. Following the conventional treatment of the Ricardian model, the Heckscher-Ohlin model, and the

specific factors model; new trade models which incorporate scale economies and imperfect competition are discussed. Prerequisite: Economics 210A-B.

**269A-Z Special Topics in Macroeconomics (4).** Prerequisites vary. May be repeated for credit as topics vary.

## 270-279: PUBLIC CHOICE

**270A-B-C Seminar in Public Choice I, II, III (4-4-4).** Public choice lies at the intersection of economics and political science. This course involves the use of tools derived from economics to understand the behavior of governments and of citizens when they deal with politics. Prerequisite: graduate standing and Social Sciences 111H. Same as Political Science 270A-B-C.

**271A-B Public Choice I, II (4-4).** Application of economics tools to understanding the behavior of democratic governments. 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.

**279A-Z Special Topics in Public Choice (4).** Prerequisites vary. May be repeated for credit as topics vary.

## 280-289: URBAN AND TRANSPORTATION ECONOMICS

**281A-B Urban Economics I, II (4-4).** Theoretical and empirical analysis of the economic functioning of urban areas. Urban economic development, location of firms and households, housing markets, urban public finance. Econometric estimation of hedonic price functions for housing. Prerequisites: Economics 100B and 203A. Formerly Economics 214E-F.

**282A-B Transportation Economics I, II (4-4).** **282A:** 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. **282B:** Travel demand analysis including discussion of econometric techniques. Pricing and investment in urban transportation, selected policy issues.

**283A Urban and Transportation Policy (4).** Application of economic approaches to urban and transportation policy issues at national, state, and local levels. Special attention is given to the evolution of competition between modes and attempts to realistically price urban transportation. Prerequisite: graduate standing or consent of instructor.

**285A-B-C Colloquium for Transportation Science I, II, III (2-2-2).** Selected theoretical perspectives on transportation based on the study of human behavior. Organized by Interdisciplinary Program in Transportation Science. Research presentations by faculty, students, and visitors supplemented by class discussion. Prerequisite: graduate standing or consent of instructor.

**289A-Z Special Topics in Urban and Transportation Economics (4).** Prerequisites vary. May be repeated for credit as topics vary.

## 290-299: SPECIAL COURSES

**290 Dissertation Research (4 to 12).** Prerequisite: consent of instructor. May be repeated for credit.

**299 Independent Study (4).** May be repeated for credit.

# THE CURRICULUM IN GEOGRAPHY

The curriculum in geography covers such topics as the evolution of the landscape, arrangement of urban centers, the internal structure of cities, the arrangement of industrial and agricultural activities, the pattern of movement of people, goods and ideas, and relationships between humans and the environment. 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. (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. (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. (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 and 119.

#### Social Sciences 118 Geographical Analysis

**118A Mathematical Analysis of 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.

**118G Regional Geography of California (4).** Geographical analysis of selected regions of California, in particular their geomorphological, hydrological, and climatic conditions, as well as their economic and social strengths and weaknesses. Includes fieldwork in Orange County on Environmental, social, and residential problems, with legislative background information. Prerequisite: Social Sciences 5B.

**118J Maps and Landscapes (4).** Focuses on (1) the principles of map preparation, with examples and exercises; and (2) the interpretation of maps, with special emphasis on the topographic maps of the U.S. Geologic Survey, again with selected examples and exercises. Recommended prerequisite: introductory course work in physical geography or earth sciences.

**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.

## DEPARTMENT OF LINGUISTICS

5215 Social Sciences II; (714) 824-7504  
C.-T. James Huang, **Department Chair**

Language is one of the most fundamental human instincts. It is an extraordinarily intricate system that all of us master as young children without special teaching, and that gives us the ability to communicate, tell stories, and express our deepest feelings. Linguistics is the scientific study of this human language. It is concerned with understanding the nature of language and our knowledge of it, how we acquire it, and how that knowledge is put to use. It is connected to many other fields of study, including psychology, anthropology, sociology, biology, physics, mathematics, computer science, philosophy, and literature.

### Undergraduate Program

#### REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57-61.

**School Requirements:** See page 325.

#### Departmental Requirements for the Major

School requirements must be met and must include 14–15 courses (56–63 units) as specified below:

- A. Six core courses: Linguistics 3, 10, 20, 100, 111, and 121.
- B. Six linguistics courses, at least four of which must be upper-division. One of these four 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. 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, 165C, 166A, and as the topics might apply, 160 and 164A).
  - (3) Two courses in logic (from the Philosophy series 30A-B or 105A-B-C) or computation (from the Information and Computer Science series 21–22).

**Residence Requirement for the Linguistics Major:** At least five upper-division courses required for the major must be completed successfully at UCI.

#### Honors Program in Linguistics

The Honors Program in Linguistics is designed for selected junior and senior Linguistics majors who have shown interest in moving beyond the material covered in the regular undergraduate program and demonstrated their readiness for more advanced work than is usually expected at the undergraduate level. An overall grade point average of 3.0 with 3.5 in Linguistics courses is required.

Participating students design their program in consultation with the faculty and complete a specified set of courses, culminating in the production and oral defense of a senior thesis. Successful completion of the Honors Program satisfies the upper-division writing requirement.

Four one-quarter courses are required, including Linguistics H195 (Honors Research Workshop) and H190 (Senior Thesis). Students also select one or two courses from Linguistics 114, 119, 124, 129, 139, 149, 159, and H192. Students also may choose to take either Linguistics 198 or 199. Each of these courses will normally require a term paper, and satisfactory completion of these papers with a grade of A- or better is required for Honors students. These term papers usually are closely connected to the senior thesis topic and contribute to its final form. Two of the courses taken toward

fulfilling the Honors Program requirements will also count toward the requirements for the major in Linguistics.

#### Linguistics Minor Requirements

Requirements for the minor in Linguistics are met by taking seven linguistics courses (28 units) as specified below:

- A. Linguistics 3, 10, and 20.
- B. Four additional linguistics courses, three of which must be upper-division.

**Residence Requirement:** At least three upper-division courses required for the minor must be completed successfully at UCI.

### Graduate Program

#### Participating Faculty

Lisa L.-S. Cheng: Syntax, Chinese linguistics, syntax-phonology interface  
Naoki Fukui: Syntactic theory, comparative syntax, Japanese linguistics  
C.-T. James Huang: Syntax, semantics, structure of East Asian languages  
Mary Ritchie Key: Historical linguistics, American Indian languages  
Utpal Lahiri: Formal semantics, syntax  
Robert May: Syntax, semantics, theory of logical form  
Bernard Tranel: Phonological theory, French linguistics  
Maria Uribe-Echevarria: Syntax, morphology, Basque, Romance linguistics  
Maira Yip: Feature theory, non-linear phonology, Chinese phonology

#### Affiliated Faculty

Richard Barrutia: Spanish linguistics, bilingualism  
James Boster: Cognitive anthropology, ethnographic semantics  
Michael Fuller: Classical Chinese grammar and literature  
Mary-Louise Kean: Biological foundations of language  
Virginia A. Mann: Speech perception, psycholinguistics  
Terence Parsons: Semantics  
Robin Scarcella: Sociolinguistics, second-language acquisition  
Armin Schwegler: Spanish, historical linguistics, pidgins and creoles  
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.

The program leads to a Ph.D. in Social Sciences with a concentration in Linguistics.

#### ADMISSION

While at least some undergraduate training in theoretical linguistics is desirable, applications are also welcomed from students 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

Course requirements consist of eight core courses (Phonology I, II, III; Syntax I, II, III; and Semantics I, II), four additional Linguistics courses, a proseminar in Cognitive Sciences or an appropriate substitute, research seminars, and a research workshop. The minor area requirement can be met with two courses in a single minor area (e.g., cognitive sciences, computational linguistics, philosophy) or a



critical literature survey in a non-core area of language research. For the qualifying examination, students must write two papers of publishable quality in different core areas (phonology, morphology, syntax, semantics, psycholinguistics). A dissertation proposal is required for the advancement to candidacy examination.

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.

Students are expected to defend the dissertation and to give a public presentation of their doctoral research.

## Courses in Linguistics

### LOWER DIVISION

**1 Languages of the World (4).** The world has over 5,000 languages, with an exuberant variety of sounds, words, and grammars. Introduction to a representative selection (about eight), drawn from every continent. Students are not expected to learn these languages, but rather to explore them and study their structure and complexity. (VII-B)

**3 Introduction to Linguistics (4).** Emphasis on the notion that language is a remarkable achievement of the human mind. Current insights into the nature of language. Survey of various subfields of linguistics. Introduction to linguistic analysis. (III or V)

**10 Introduction to Phonology (4).** Basic concepts in phonetic description and phonological analysis. Formerly Linguistics 110. (III or V)

**20 Introduction to Syntax (4).** Basic concepts in syntactic description and grammatical analysis. Prerequisite: Linguistics 3. Formerly Linguistics 120. (III or V)

**51 Acquisition of Language (4).** What children say, what they mean, and what they understand. Theories about the learning of language by one-, two-, and three-year olds. Comparison of kinds of data on which these theories are based. Same as Psychology 56L. (III)

**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.

**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.

### UPPER DIVISION

**100 Grammatical Theory (4).** Has both a phonology and a syntax component, and forms a bridge between lower-division course offerings and more advanced courses in phonology, syntax, and morphology. Emphasis on development of analytical skills, and evaluation of alternative proposals. Prerequisites: Linguistics 10 and 20.

### 101-109: COMPUTATIONAL LINGUISTICS

**102 Formal Languages and Automata (4).** Formal aspects of describing and recognizing languages by grammars and automata. Parsing regular and context-free languages. Ambiguity, nondeterminism. Elements of computability: Turing machines, random access machines, undecidable problems, NP-completeness. Prerequisites: ICS 23 and ICS 51; Mathematics 2A-B-C. Same as ICS 162.

### 110-119: PHONETICS / PHONOLOGY

**111 Intermediate Phonology (4).** Fundamentals of phonological theory. Intensive practice in phonological analysis. Prerequisite: Linguistics 100 or equivalent. Concurrent with Linguistics 211.

**112 Advanced Phonology (4).** Overview of recent developments in phonological theory. Prerequisite: Linguistics 111. Concurrent with Linguistics 212.

**114 Current Topics in Phonological Theory (4).** Phonology seminar. Intensive study of a small number of current topics in phonological theory. Prerequisite: Linguistics 112. May be repeated for credit as topic varies. Concurrent with Linguistics 214.

**119 Special Topics in Phonetics/Phonology (4).** Prerequisites vary. May be repeated for credit as topic varies.

### 120-129: SYNTAX

**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 100 or equivalent. Concurrent with Linguistics 221.

**122 Advanced Syntax (4).** Intensive investigation of selected current topics in syntactic theory. Readings drawn from primary literature. Prerequisite: Linguistics 121. Concurrent with Linguistics 222.

**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. Concurrent with Linguistics 224.

**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 theoretical developments. Prerequisite: Linguistics 100 or consent of instructor. Concurrent with Linguistics 232.

**139 Special Topics in Morphology (4).** Prerequisites vary. May be repeated for credit as topic varies.

### 140-149: SEMANTICS

**140 Formal Foundations of Linguistics (4).** Introduction to the fundamental concepts of logic, set theory, and automata theory, and their relation to linguistics. Prerequisite: at least one of the following: Linguistics 121 or 143, Philosophy 105B, Mathematics 150, ICS 162, or consent of instructor. Concurrent with Linguistics 240.

**141 Topics in Philosophy of Language (4).** Selected topics in the philosophy of language, e.g., the nature of meaning, mechanisms of reference, speech acts. May be repeated for credit as topics vary. Same as Philosophy 145.

**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 140, Philosophy 105B, Mathematics 150, ICS 162, or consent of instructor. Concurrent with Linguistics 243.

**149 Special Topics in Semantics (4).** Prerequisites vary. May be repeated for credit as topic varies.

### 150-159: PSYCHOLINGUISTICS

**150 Psychology of Language (4).** Study of a particular topic in the psychology of language with particular emphasis on syntax and semantics. Same as Psychology 175P.

**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 or Psychology 7A or 9A-B-C. Same as Psychology 175L. Concurrent with Linguistics 252.

**154 Theories of Second Language Acquisition (4).** Research in the acquisition and learning of second and foreign languages. The influence of language acquisition theory on past and current teaching methodology. A comparison of first and second language acquisition. Prerequisite: Linguistics 3. Recommended: Linguistics 51.

**155 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.

**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 or 9A-B-C; Linguistics 150 or Psychology 140C; satisfactory completion of the lower-division writing requirement. Same as Psychology 143R. Concurrent with Linguistics 257.

**158 Language and the Brain (4).** Analysis of current research on the biological bases of human linguistic capacity. Development, focusing on hemispheric specialization and plasticity; localization of specific linguistic functions in adults, with emphasis on study of aphasia; relation of linguistic capacity to general cognitive capacity, considering research on retardation. Prerequisite: Biological Sciences 1C when topic is Brain and Behavior, or Biological Sciences 110, or consent of instructor. Same as Biological Sciences 160 and Psychology 156B.

**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, phrase structure, grammatical relations, anaphora, movement processes and constraints. Discussion of the relation between language universals and linguistic typology. Prerequisite: Linguistics 121. Concurrent with Linguistics 260.

**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.

**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.

**164A Topics in Romance Languages (4).** Prerequisites vary. May be repeated for credit as topic varies. Concurrent with Linguistics 264A.

**164B French Phonetics (4).** Study of the sound structure of French. Introduction to elements of general phonetics, contrastive (French/English) phonetics, and French phonetics and phonology. Designed to help students improve their pronunciation. Also serves as a preparatory course for language teaching. Prerequisite: French 2C or equivalent. Same as French 111.

**165A Linguistic Structure of Chinese (4).** Introduction to the phonology and major syntactic patterns of Mandarin Chinese. Prerequisite: Chinese 2C or Linguistics 10 or 20. Same as East Asian Languages and Literatures 113. Concurrent with Linguistics 265A.

**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 10 or 20. Same as East Asian Languages and Literatures 123. Concurrent with Linguistics 265B.

**165C Linguistic Structure of Korean (4).** Introduction to essential grammatical aspects of the Korean language. Comparisons to other languages. Prerequisite: East Asian Languages and Literatures 2C or consent of instructor. Same as East Asian Languages and Literatures 133.

**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.

**168A Sociolinguistics (4).** Sociolinguistic varieties of language examined from different points of view: geographical, temporal, and cultural. Prerequisite: Linguistics 3. Same as Women's Studies 186A and Anthropology 122S.

**169 Special Topics in Language Studies (4).** Prerequisites vary. May be repeated for credit as topic varies.

### 170-179: HISTORICAL LINGUISTICS

**170 Historical Linguistics (4).** Study of language change. Methods of historical analysis of language. Classification of languages and aspects of language change by internal reconstruction and the comparative method. Prerequisite: Linguistics 3. Recommended: Linguistics 10.

**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.

**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.

**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. Prerequisite: Linguistics 10. Same as Psychology 155T.

**184 Foundations of Communication (4).** The logical and semiotic foundations of communication and signification. Same as Psychology 154C.

**189 Special Topics in Cognitive Semiotics (4).** Prerequisites vary. May be repeated for credit as topic varies.

### 190-199: SPECIAL COURSES

**H190 Senior Thesis (4-4-4).** Prerequisite: enrollment in Honors Program in Linguistics and consent of instructor; completion of lower-division writing requirement.

**H192 Honors Seminar (4).** Critical reading of current literature and discussion of work in progress by members of the department. A research paper is required. Prerequisite: enrollment in Honors Program in Linguistics and consent of instructor. May be repeated for credit as topics vary.

**H195 Honors Research Workshop (4).** Research methods and paper-writing skills. Students present various stages of their Honors thesis research projects for feedback and guidance from the professor and each other. Prerequisite: enrollment in Honors Program in Linguistics and consent of instructor. May be repeated for credit as topics vary.

**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.

## GRADUATE

## 210–219: PHONETICS/PHONOLOGY

**211 Phonology I (4).** Fundamentals of phonological theory. Intensive practice in phonological analysis. Prerequisite: graduate standing. Concurrent with Linguistics 111.

**212 Phonology II (4).** Overview of recent developments in phonological theory. Prerequisite: Linguistics 211. Concurrent with Linguistics 112.

**214 Phonology III (4).** Intensive study of a small number of current topics in phonological theory. Prerequisite: Linguistics 212. May be repeated for credit as topic varies. Concurrent with Linguistics 114.

**218 Seminar in Phonetics/Phonology (4).** Focuses on ongoing research in phonetics/phonology. Prerequisite: Linguistics 214 or consent of instructor. May be repeated for credit as topic varies.

**219 Topics in Phonetics/Phonology (4).** Prerequisites vary. May be repeated for credit as topic varies.

## 220–229: SYNTAX

**221 Syntax I (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: graduate standing. Concurrent with Linguistics 121.

**222 Syntax II (4).** Intensive investigation of selected current topics in syntactic theory. Readings drawn from primary literature. Prerequisite: Linguistics 221. Concurrent with Linguistics 122.

**224 Syntax III (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 222. May be repeated for credit as topic varies. Concurrent with Linguistics 124.

**228 Seminar in Syntax (4).** Seminar representing instructor's and graduate students' current research. Prerequisite: Linguistics 224 or consent of instructor. May be repeated for credit as topic varies.

**229 Topics in Syntax (4).** Prerequisites vary. May be repeated for credit as topic varies.

## 230–239: MORPHOLOGY

**232 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 theoretical developments. Prerequisite: graduate standing. Concurrent with Linguistics 132.

**238 Seminar in Morphology (4).** Focuses on ongoing research in morphology. Prerequisite: Linguistics 232 or consent of instructor. May be repeated for credit as topic varies.

**239 Topics in Morphology (4).** Prerequisites vary. May be repeated for credit as topic varies.

## 240–249: SEMANTICS

**240 Formal Foundations of Linguistics (4).** Introduction to the fundamental concepts of logic, set theory, and automata theory, and their relation to linguistics. Prerequisite: graduate standing. Concurrent with Linguistics 140.

**241 Topics in Philosophy of Language (4).** Prerequisite: graduate standing. May be repeated for credit as topics vary. Same as Philosophy 245.

**243 Semantics I (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: graduate standing. Concurrent with Linguistics 143.

**244 Semantics II (4).** The empirical study of semantics within linguistic theory. Emphasis on the Theory of Logical Form and its integration in the broader context of the representation of syntactic and semantic structure. Explores quantification, anaphora and ellipsis. Prerequisite: Linguistics 243.

**248 Seminar in Semantics (4).** Focuses on ongoing research in semantics. Prerequisite: Linguistics 244 or consent of instructor. May be repeated for credit as topic varies.

**249 Topics in Semantics (4).** Prerequisites vary. May be repeated for credit as topic varies.

## 250–259: PSYCHOLINGUISTICS

**252 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. Prerequisite: graduate standing. Concurrent with Linguistics 152 and Psychology 175L.

**257 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: graduate standing or consent of instructor. Same as Psychology 215. Concurrent with Linguistics 157 and Psychology 143R.

**258 Seminar in Psycholinguistics (4).** Focuses on ongoing research in psycholinguistics. Prerequisite: graduate standing. May be repeated for credit as topic varies.

**259 Topics in Psycholinguistics (4).** Prerequisites vary. May be repeated for credit as topic varies.

## 260–269: LANGUAGE STUDIES

**260 Language Typology (4).** Cross-linguistic survey of major linguistic phenomena, especially as they pertain to word order, phrase structure, grammatical relations, anaphora, movement processes and constraints. Discussion of the relation between language universals and linguistic typology. Prerequisite: Linguistics 221 or consent of instructor. Concurrent with Linguistics 160.

**264A Topics in Romance Languages (4).** Prerequisites vary. May be repeated for credit as topic varies. Concurrent with Linguistics 164A.

**265A Linguistic Structure of Chinese (4).** Introduction to the phonology and major syntactic patterns of Mandarin Chinese. Open only to Linguistics graduate students or consent of instructor. Concurrent with Linguistics 165A and East Asian Languages and Literatures 113.

**265B 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 221 or consent of instructor. Concurrent with Linguistics 165B and East Asian Languages and Literatures 123.

**268 Seminar in Language Studies (4).** Seminar in language studies. Prerequisite: graduate standing. May be repeated for credit as topic varies.

**269 Topics in Language Studies (4).** Prerequisites vary. May be repeated for credit as topic varies.

## 270–279: HISTORICAL LINGUISTICS

**278 Seminar in Historical Linguistics (4).** Focuses on ongoing research in historical linguistics. Prerequisite: graduate standing. May be repeated for credit as topic varies.

**279 Topics in Historical Linguistics (4).** Prerequisites vary. May be repeated for credit as topic varies.

## 290–299: SPECIAL COURSES

**290 Dissertation Research (4 to 12).** Prerequisite: graduate standing. May be repeated for credit.

**295 Research Workshop (4).** Under close faculty guidance, students prepare the papers of publishable quality required for the qualifying examination. Prerequisite: consent of instructor. Students may take the course once for each of the two required papers.

**299 Independent Study (4).** Prerequisite: graduate standing and consent of instructor. May be repeated for credit as topic varies.

## DEPARTMENT OF POLITICS AND SOCIETY

5229 Social Sciences II; (714) 824-5361  
Russell J. Dalton, **Department Chair**

### Undergraduate Program

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 public law. The Department also offers an Honors Program in Political Science for juniors and seniors, culminating in a senior honors thesis.

The Department is composed of a strong and diverse faculty especially interested in analyzing central questions of political science related to such topics as policy-making, political structures, participation, conflict, change and development, power and authority, and interstate relations. The faculty has particular strength in interdisciplinary approaches, in comparative analysis, and in the application of quantitative data to political science issues.

### REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57-61.

**School Requirements:** See page 325.

#### 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. It is recommended that these courses be taken during a student's first two years as a Political Science major at UCI.
- B. Two lower-division courses in political science (eight units).
- C. Six upper-division courses in political science (24 units) chosen from one of the political science modules numbered 120-179. Three of these courses must be from one module. In addition, the lower-division introduction course to that module also is required.

#### 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, students must enroll in the Honors Thesis Workshop (Political Science H182A, offered during the fall quarter), and three quarters of the Senior Thesis course (Political Science 190). Students write their senior thesis, which is designed and completed under their faculty advisor's supervision. Upon successful completion of their senior thesis, students graduate with Honors in Political Science and their transcripts note that they were in the Honors Program in Political Science.

### Public Affairs Internship Program

The Public Affairs Internship Program, sponsored by the Department of Politics and Society, is designed to provide Political Science students with professional experience in the fields of government, nongovernmental organizations, the media, law, business, consulting, and others. The program is open to all sophomore, junior, and senior Political Science majors and minors.

This program provides a selection of internship opportunities open exclusively to Political Science students by intern-sponsors, as available. Students also may create their own internship opportunities, consistent with Departmental guidelines. Students are required to enroll in Political Science 183 during the quarter of their internship. This course is supervised by the internship coordinator and participating members of the faculty.

Information and applications are available in the Department office.

### Political Science Minor Requirements

Requirements for the minor in Political Science are met by taking seven political science courses (28 units) as specified below:

- A. One course selected from Political Science 6A, 6B, or 6C.
- B. Three upper-division political science courses, chosen from one Political Science module.
- C. Three additional courses in political science, chosen from those numbered Political Science 6A, 6B, 6C, 20-79, or 120-179.

### Graduate Program

#### Participating Faculty

Michel Crozier: Organizational sociology, public administration  
Russell J. 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  
L. Manuel García y Griego: U.S.-Mexico relations, international relations, migration and demography  
Bernard Grofman: Mathematical models of collective decision making, formal democratic theory, sequential decision making, and politics of small groups  
Helen Ingram: Public policy, U.S.-Mexico relations, American politics  
Claire Kim: Racial and ethnic politics, protest and social movements, contemporary political theory  
Sung-Chull Lee: Mathematical modeling in social sciences, conflict resolution, and East Asian politics  
Kristen R. Monroe: Political economy, rationality, American politics, methodology  
Patrick Morgan: National security policy, American foreign policy, international politics, U.S.-European relations, Soviet politics  
Jack W. Peltason: Constitutional law and civil liberties  
Mark P. Petracca: American political institutions (presidency and congress), interest organizations, public policy, power and political discourse  
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  
Wayne Sandholtz: International political economy, European community  
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  
Alec Stone: Comparative politics, comparative judicial behavior, international relations  
Rein Taagepera: Mathematical models and quantitative analysis of elections, inequality, arms races, growth-decline phenomena and Baltic area studies  
Carole J. Uhlaner: Comparative political participation, formal models of political behavior  
Martin Wattenberg: American political behavior and institutions

The Department of Politics and Society offers a program of study leading to the Ph.D. in Political Science. The graduate program 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.

Three Organized Research Units, the Institute of Transportation Studies, the Center for Research on Information Technology and Organizations, and the Institute for Mathematical Behavioral Sciences, 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 in the Center for the Study of Democracy.

## ADMISSIONS

The deadline for application for fall quarter admission is January 15. Students are admitted for winter or spring quarters only under exceptional circumstances. Additional information is available in the general section on admission to Social Science graduate programs. Please note especially the required examinations.

## REQUIREMENTS

First-year students must take a core program of graduate seminars, focusing on major substantive areas as well as research methods. Students are required to complete one year of statistics, preferably before enrollment but no later than their first year. Competence in a foreign language is required. Students may substitute mastery of an advanced research skill in place of a foreign language. To acquire such a skill (which could involve course work in such disciplines as economics, mathematics and computer science, or statistics), students could take courses in econometrics, advanced multivariate regression, or computer science. Attendance in a colloquium series also is required for all graduate students during their first two years in residence.

## Reviews and Examinations

Students ordinarily are expected to maintain a grade point average of 3.5 or better. At the completion of the first year, a review of performance in the graduate program will be conducted for each student by the 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 successful completion of these papers and demonstration of competence in mathematics and a foreign language or an advanced research skill, a candidacy committee is appointed to oversee the qualifying examination and the formal advancement to candidacy. Students are expected to advance to candidacy by the ninth quarter of graduate study.

After the student advances to candidacy, the doctoral committee, usually composed of three members of the candidacy committee, reviews a dissertation prospectus and supervises work toward completion of the dissertation. Within six months of the oral qualifying examination (the formal advancement to candidacy), students are expected to meet with their doctoral committee, in order to discuss with the members a dissertation prospectus.

## 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.

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 School of 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.

## 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. (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. (III)

**39 Lower-Division Special Topics in Political Theory (4).** May be repeated for credit as topics vary.

**41A Introduction to International Relations (4).** Analysis of political relations between and among nations with emphasis on explanations of conflict and cooperation. The role of ideologies and their relation to international problems are also examined. (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. (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.

**49 Lower-Division Special Topics in International Relations (4).** May be repeated for credit as topics vary.

**51A Introduction to Comparative Politics (4).** Presents various analytical methods used to compare political systems. Emphasis on examination of theories and research with national political systems as units of analysis. Understanding how it is possible to compare political units and make meaningful statements about them. (III)

**59 Lower-Division Special Topics in Comparative Politics (4).** May be repeated for credit as topics vary.

**71A Introduction to Law (4).** An introduction to the study of judicial politics. Questions include: what is law?; what is a court?; who are the judges? Analysis of a wide range of judicial decisions illustrates the political importance of courts in the U.S. and elsewhere.

**79 Lower-Division Special Topics in Law (4).** May be repeated for credit as topics vary.

## 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.

**121B Mass Media and the Nomination Process (4).** Examines changes in the presidential nomination process over the last four decades as well as the role of the media in this process. Students do a research paper comparing the media's coverage of two nomination races in different historical eras.

**121C U.S. Elections and Voting Behavior (4).** Examines how voters evaluate political parties, candidates, and issues in electoral campaigns to reach their decisions. Numerous controversies concerning the degree of issue voting, sophistication of candidate evaluations, and the decline of political parties are discussed.

**121D 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.

**122A American Metropolitan Politics (4).** An analysis of the politics of urban and suburban cities. Main themes include alternative explanations of how political power is exercised and how policy decisions are made for urban governments; the structure of local political systems, including the

problems of metropolitanism and federalism; the major policy problems facing the urban area, particularly from the perspective of the "underclass."

**123A Parties and Political Organizations (4).** A consideration of the role that parties and other political organizations play in the American political process. Also looks at the development and significance of PACs, interest groups, and social movements as vehicles for democratic participation.

**123B Representation and Redistricting (4).** Deals with classical theories of representation: issues of racial and political representation in U.S. legislatures and city councils; proportional representation models and comparative election systems. Prerequisite: Political Science 21A.

**123C Reforming American Politics (4).** Assesses the demands and prospects for political reform in America. Where is political reform most needed? Why? What form shall it take? Focuses specifically on ethics of public decision-making, professionalization of American politics, institutional designs for democratic governance.

**123D 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.

**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?

**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.

**126B Urban Policy Analysis (4).** Problem-solving seminar examining key issues for urban political systems and the metropolitan area. Evaluation of the nature, quality, and feasibility of alternative analyses of a series of policy problems, such as housing, poverty/welfare policy, transportation, crime, education. Prerequisite: consent of instructor.

**126C U.S. Immigration Policy (4).** Examines selected immigration policy debates since the nineteenth century, rationale and consequences of immigration law since 1965, problems of administration, implementation and enforcement, impact of immigration policy on foreign relations, and contemporary debate regarding the future of U.S. policy.

**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.

**128A Political Psychology (4).** Examination of how psychological theory and research may be used to better understand political thought and behavior. Drawing on theories of learning, cognition, and personality, discusses the formation of political attitudes, the process of political decision-making, the nature of political leadership. Same as Psychology 176A.

**128B 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, political scientists. Prerequisite: satisfaction of the lower-division writing requirement.

**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, neo-conservatism. Emphasis on underlying views of human nature and history. Prerequisite: upper-division standing or consent of instructor.

**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.

**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.

**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 Political Science 225Z.

**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.

**132B-C-D Radical Social Proposals (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 132B: satisfactory completion of the lower-division writing requirement.

**132E 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 172E. Students may not receive credit for both Political Science 32A/Sociology 72 and Political Science 132F/Sociology 172E.

**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.

**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.

**133D Analytic Political Research (4).** Encourages students to think creatively and analytically about politics by applying mathematical techniques as a means to increase understanding. Introduces the use of both static and dynamic mathematical models on such political topics as elections, revolution, and arms races.

**134A 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.

**134B Modern Political Theory (4).** Focuses on a different aspect of modern political theory each quarter.

**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.

**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.

**134F Social and Political Theory (4).** Focus is on recent major work in social and political theory. An in-depth analysis of a relatively small body of writing. Authors discussed include Jurgen Habermas, Anthony Giddens, and Richard Rorty.

**134H Language and Power (4).** Seminar to study a theory of how reality/meaning/knowledge is created in language as a consequence of structures of power. Prerequisite: upper-division standing and consent of instructor. Strongly recommended: 3.5 GPA and/or background in modern language analysis.

**134J Sexism and Power (4).** Sexism may be seen as a particular form of socially constructed power which creates and maintains gender differences as relations and practices of structured inequalities. Males and females are objects constructed in a powered language dominated and controlled by males to their positional and distributional advantage. Prerequisite: upper-division standing. Same as Sociology 168.

**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.

**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.

**137A Politics and Human Nature (4).** Addresses the central debate between positive social science and normative political theory: is there an intrinsic human nature? If so, what is it? What is its origin? And how much cultural variation does it display? Prerequisite: satisfaction of the lower-division writing requirement.

**139 Special Topics in Political Theory and Methods (4).** May be repeated for credit as topic varies.

**140-149: INTERNATIONAL RELATIONS**

**141A 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.

**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.

**141D The European Union (4).** Examination of the European Union as an ongoing political experiment. Assesses diverse explanations for the evolution of European economic and political integration. Analyzes the development of EU institutions/policies in such areas as trade, high technology, monetary relations, foreign policy. Prerequisite: upper-division standing.

**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.

**142D U.S. Foreign Policy I: Globalism and Cold War (4).** Looks at the changing international perspectives, policy responses, and military strategies of presidential administrations from Truman to Reagan. In assessing the motives and objectives of U.S. foreign policy leaders during the "Cold War" era, the concept of "national interest" is examined.

**142E U.S. Foreign Policy II: Cold War Decline and After (4).** Deals with U.S. foreign policy from the post-Vietnam War era through the collapse of the Cold War and into the emergence of the post-Cold War era, roughly from 1972 to the present.



**142F U.S. Foreign Policy III: National Security Decision-Making (4).**

Concept of "national security" from 1947-1990s is reviewed. Organizational and psychological factors that influence decision-making, the dangers of "groupthink," and the issues of accountability are analyzed. National security agenda (military, economic, environmental, and social) for the 1990s is discussed.

**142G U.S. Coercive Diplomacy (4).** Examines the theory of compellence and the U.S. practice of coercive diplomacy—the power to change the behavior of other governments. Specific case examples include the Cuban missile crisis, bombing of North Vietnam, the Nicaraguan Contras, Desert Shield/Desert Storm, and Libya. Prerequisite: junior or senior standing.

**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.

**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.

**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.

**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.

**145B U.S.-Mexican Relations (4).** Realism and interdependence theories are applied to this asymmetric relationship. Analysis of NAFTA, relations with Canada, current issues in trade, capital flows, migration, narcotics control, and energy. Emphasis on interplay of domestic politics (California, Mexican Americans) and foreign policy.

**146A Ethics and International Relations (4).** Examines global political-economic relations through competing ethical perspectives, derived from different theoretical traditions. Topics: war and peace, intervention, North-South gap, supranational integration. (VII-B)

**147A International Cooperation (4).** Examines different approaches to the study of international cooperation placing special emphasis on multilateral institutional and "regimes" in areas such as trade (GATT), security (nonproliferation), and the global environment. (VII-B)

**147B Interdependence in World Politics (4).** Examines the effects of transnational networks and international economic interactions—e.g., migration, trade, and capital flows—on international political outcomes. Focuses on the cases of U.S.-Mexican and U.S.-Canadian relations.

**148A Model United Nations (2).** Focuses on simulations of the foreign policy pursuits of selected countries in the international community. Emphasis is placed on understanding the rules of debate, as well as the policy positions of the student's selected country, in the United Nations. Should be taken as a one-year sequence. May be taken for credit six times.

**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. (VII-B)

**151B Introduction to Chinese Politics (4).** Background to the Chinese revolution, rise of the Communist party; and institutions, ideology, and structure of Communist party rule from 1949-present. (VII-B)

**151C Chinese Politics: Policy, Leadership, and Change (4).** Examines major policies from 1949 to the present, and considers the changing role of the Communist Party and its shifting treatment of various social groups; the era of Mao Zedong, reforms under Deng, and post-Deng politics. (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. (VII-B)

**151E Advanced Topics in Japanese Politics (4).** Provides the advanced undergraduate the opportunity to probe beneath the surface of Japanese politics and policy. Focus on contemporary policy issues, including foreign policy, defense, social welfare, and industrial policy. Prerequisite: Political Science 151D or consent of instructor; satisfactory completion of the lower-division writing requirement.

**151F Korean Politics and Society (4).** Examination of contemporary political/social structures and process of Korea (South and North). Historical and cultural influences on current political systems and policies. Also included are economic development, national security, unification issues, and foreign relations. (VII-B)

**151G Electoral Systems (4).** A worldwide overview of electoral laws by which votes are converted into assembly seats. Systematic analysis of these laws and their effect on political process and stability. Single-, two-, and multi-party systems. Proportional representation versus plurality rule. Majoritarian and consensus patterns of government. Political Science 52B and 151G may not both be taken for credit.

**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.

**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. (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. (VII-B)

**152D-E Post-Soviet Politics I, II (4-4).** An overview of the present sociopolitical structure and of the major national cultures within the former Soviet Union. **152E:** Expands on the themes of 152D plus individual research on any former Soviet topic. Prerequisite for 152E: Political Science 152D or consent of instructor; satisfaction of the lower-division writing requirement. (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)

**152G Politics and Economic Competition (4).** Explores the ways in which nations respond to international economic competition, focusing on domestic institutions, politics, and policies. Draws on comparisons among several advanced industrial countries: the United States, Japan, France, Germany, Sweden, and the United Kingdom. Prerequisite: upper-division standing.

**152J Political Economy of Industrialized Nations (4).** Examines politics and policy in the "rich" countries, focusing particularly on the U.S., Japan, Britain, France, and Germany. Identifies the distinct policy profiles of these countries, looking at historical and political explanations for differences across countries.

**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.

**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.

**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.

**153D Mexican Politics (4).** An overview of contemporary Mexican government and politics and their evolution in the twentieth century. Emphasis on state-society relations, the changing role of government in the economy, democratization, and the impact of opposition groups in politics and policy, including foreign policy.

**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.

**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 and Women's Studies 180F. (VII-B)

**154C Comparative Politics: Four Nations, Three Continents (4).** Studies four countries in a comparative fashion: their respective political histories and cultural traditions, actual differences among their superficially similar party, parliamentary, and executive institutions; contemporary economic policy. The countries represent three continents and stand at varying levels of economic development. (VII-B)

**154E Comparative Political Economy (4).** Examines the interaction between politics and markets, both in theory and in practice, explicitly linking classic works on political economy with current policy debates. Studies how political systems and markets are organized in different national settings.

**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.

**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.

**155E Revolution and Collective Political Violence (4).** Examines the theory of collective political violence, internal war, and insurgency. Considers causes and "process" of revolutions; comparative characteristics of organized armed movements; personality of revolutionary leaders. U.S. foreign policy and military doctrine on insurgency and low-intensity conflict reviewed. Prerequisite: satisfaction of the lower-division writing requirement.

**156A Political Participation (4).** The ways in which people in various political systems take part in politics, especially in activities directed toward affecting outcomes. Who is active, what they do, why they do it, and what difference it makes.

**156B Participation and Representation (4).** Examines the concepts "political participation" and "political representation" and the interconnection between these concepts. Addresses both the theoretical issues and debates raised by these concepts and considers how they are studied empirically. Prerequisite: upper-division standing or consent of instructor.

**156C Citizen Politics (4).** Study of the role of public opinion in the political process. Reviews some of the key research approaches and findings on which our current understanding of public opinion is based, and provides an opportunity to conduct research and to analyze public opinion surveys.

**156D Social Movements and Collective Behavior (4).** A survey of models of collective action drawn from sociology, economics, psychology, and political science, and focusing on areas such as social movements, strikes, crowd psychology, cults, fads, fashions, public opinion, and symbolic and mythical elements in collective culture. Prerequisite: Political Science 6A, Sociology 1, or Economics 1. Same as Sociology 174.

**159 Special Topics in Comparative Politics (4).** May be repeated for credit as topic varies.

## 170-179: PUBLIC LAW

**171A Law and Society (4).** Examination of the law and its various roles in society. The nature and meaning of law; legality and power in the American system; law as a mechanism for social change; the role of law in dispute processing, social control, compliance with judicial decisions. Prerequisites: Political Science 71A and satisfactory completion of the lower-division writing requirement.

**171B Jurisprudence (4).** A survey of legal philosophies. Explores jurisprudence from the ancient Greeks to the present, including natural law philosophy; legal positivism and realism; sociological jurisprudence; and liberal, radical, and conservative thought. Prerequisite: Political Science 71A.

**171C Comparative Constitutional Politics (4).** Examines the impact of constitutional courts on politics and policy-making in Canada, France, Germany, and the United States. Cases may focus on the constitutional politics of free speech, abortion, rights to property, and the conduct of foreign relations. Prerequisite: Political Science 71A and satisfaction of the lower-division writing requirement.

**171D American Constitutional Law (4).** American constitutional interpretation through extensive analysis of cases involving the separation of powers, federal-state relations, rights of property, free expression, privacy, criminal due process, political participation, and equality. Corollary topics include legal research methods, development of judicial review, legal reasoning, and the political impact of Supreme Court decisions. Prerequisite: Political Science 71A. Political Science 171D and Criminology, Law and Society J102 may not both be taken for credit.

**171E Law and Social Sciences (4).** The use of social science evidence in litigation is examined. Looks at the complex interaction of social facts, law, statistical models, and normative judgments, focusing on political science and sociological testimony in areas of Fourteenth Amendment equal protection jurisprudence. Prerequisite: Political Science 71A.

**172A International Law (4).** Examination of the origin, changing structure, and application of international law, and the role of legal norms in regulating the behavior of states and maintaining international order. The use of force, pacific settlement of disputes among nations, human rights, international terrorism. Prerequisite: Political Science 71A.

**173A 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). Prerequisite: Political Science 71A or consent of instructor.

**174A Civil Liberties (4).** Political analysis of selected Supreme Court cases involving claims under the Bill of Rights and the Fourteenth Amendment. Topics include: race, sex, and other forms of discrimination; criminal justice; privacy; freedom of speech and related claims. Prerequisite: Political Science 71A.

**174B Constitutional Rights (4).** Addresses a central aspect of politics: the interpretation and application of the United States' fundamental rules. These rules tell us something about the goals of society, and the means chosen to achieve them by allocating rights and duties, costs, and benefits among its members. Prerequisite: Political Science 71A or consent of instructor.

**174C U.S. Supreme Court (4)** Detailed overview and analysis of the role played by the U.S. Supreme Court in the American political system. Judicial review, appointment of justices, judicial activism and judicial restraint, process of case selection, court deliberation, land decision-making, impact of Supreme Court decisions.

**179 Special Topics in Public Law (4).** Prerequisite: Political Science 71A. May be repeated for credit as topics vary.

**SPECIAL COURSES—UPPER DIVISION**

**H180 Honors Seminar in Political Science (4).** Restricted to students enrolled in the Honors Program in Political Science. May be taken for credit three times as topics vary. Formerly Political Science H180A, B, C.

**H182A Honors Thesis Workshop (4).** A weekly seminar/workshop to facilitate the exchange of ideas and research strategies among students and to review their progress in writing the thesis. Prerequisite: consent of instructor. Open only to students in the Political Science Senior Thesis program.

**183 Public Affairs Internship (4).** Supervised internship and study in political, governmental, nonprofit, or related organizations for students participating in the Department's Public Affairs Internship Program. Enrollment dependent upon availability of intern positions. Pass/Not Pass Only. Prerequisite: consent of instructor. May be taken for credit three times.

**184 Government Internship (4).** Internship and study in political, governmental, nonprofit, or related organizations for students participating in the UC/DC Program. Pass/Not Pass Only. Prerequisite: consent of instructor. May be taken for credit twice. Formerly Political Science 181A-B.

**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.

**GRADUATE**

**210A-B-C Research Seminar in Politics and Society (1.3-1.3-1.4).** Weekly reports and colloquia by faculty, students, and visitors. Students required to report on one research project over the course of three quarters. Required of first- and second-year graduate students in Political Science. Satisfactory/Unsatisfactory only. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

**211A Foundations of Modern Political Science (4).** Provides an introduction to major works by highly influential scholars in the nineteenth and twentieth centuries, such as Marx and Engels, Mosca, Michels, Weber, Wallas, and Lasswell, that constitute the foundation of contemporary political science. Required of first-year graduate students in Political Science. Prerequisite: graduate standing or consent of instructor.

**211B Micropolitics (4).** Provides students with comprehensive introduction to the substance and methods of the study of political behavior. Focuses on the level of individual behavior, but the relation to macrosocial analysis is considered. Required of first-year graduate students in Political Science. Prerequisite: graduate standing or consent of instructor.

**211C Macropolitics (4).** Examines some of the major research issues in political science involving macro-level questions: systemic processes, political institutions, or system outputs. Required of first-year graduate students in Political Science. Prerequisites: graduate standing or consent of instructor.

**219A-Z Special Topics in Politics and Society (4).** Current research in politics and society. May be repeated for credit as topics vary.

**220A 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.

**220B American Politics and the State (4).** Explores recent scholarship on various aspects of American politics while remaining attentive to the analytical and substantive importance of the state.

**229 Advanced Research Methods (2).** Topics in advanced research methods. Topics will vary. Prerequisite: graduate standing. May be repeated for credit as topics vary.

**230A Theories of Political Structure (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. Prerequisite: graduate student or consent of instructor.

**230B 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. Prerequisite: graduate standing or consent of instructor.

**230C 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. Specific reference to explaining political stability and instability, legitimacy, and dissent. Prerequisite: graduate standing or consent of instructor.

**231A Foundations of Modern Political Science II (4).** Provides an in-depth introduction to major works by highly influential scholars (including de Tocqueville, Tonnies, Durkheim, Weber), that constitute the foundations of much of contemporary political science. Prerequisite: graduate standing or consent of instructor. Continuation of Political Science 211A.

**232A Quantitative Theoretical Models in Political Science (4).** Methods of constructive quantitatively testable rational models. Interaction between empirical description and measurement, operationalization of concepts, and theoretical models. Sample models: coalition durability, size of national assemblies, arms races, trade/GNP ratio, and world population growth. Prerequisites: Social Science 11A-B-C or 100A-B-C; graduate standing or consent of instructor.

**232B Electoral Systems Seminar (4).** Studies electoral systems worldwide, analyzes their effect on the number of parties and duration of government cabinets, and applies the results to the present democratizing countries. Prerequisite: graduate standing or consent of instructor.

**233A Nietzsche (4).** The social, economic, and political philosophy of Nietzsche. Nietzsche's ideas about knowledge and language and how these ideas have influenced contemporary thinking concerning these subjects. Concurrent with Political Science 131D and Sociology 127. Prerequisite: graduate standing or consent of instructor.

**234A Research Methods in Political Science (4).** An introduction to standard research techniques in political science. Issues of epistemology, research design, and approaches to empirical analysis. Prerequisites: graduate standing or consent of instructor, and upper-division or graduate-level statistics.

**235A-B Societal Design and Redesign I, II (4-4).** Considers how basic societal institutions might be better designed in view of apparent flaws in their present organizational structure. Prerequisite: graduate standing or consent of instructor.

**240A American Foreign Policy Decision Making (4).** Assesses the changing international perspectives, policy instruments, and decision making processes of United States presidential administrations since World War II. Prerequisite: graduate standing or consent of instructor.

**241A Contemporary Research on International Conflict (4).** Acquaints students with a full spectrum of theories and methodologies employed in contemporary research on international conflict. Prerequisite: graduate standing or consent of instructor.

**241B Seminar in International Relations Theory (4).** Overview of the major theories guiding research and scholarship in international relations. Focus on major conceptual approaches (realism, neoliberalism, marxism) and levels of analysis (systemic, state, and subnational), as well as on methodological/epistemological debates engulfing the field. Prerequisite: graduate standing or consent of instructor.

**241C Theories of International Cooperation (4).** Examines and evaluates theories of international cooperation and their relations to more general conceptual and methodological approaches in international relations. Prerequisite: graduate standing or consent of instructor.

**242A International Political Economy (4).** Examination of major theoretical approaches to explaining the politics of international economic relations. Analysis of the effects of power, ideas, and international institutions on economic competition and cooperation. Prerequisite: graduate standing or consent of instructor.

**250A 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, ideology, labor, property, multinational corporations, economic regulation, international relations, and the Third World. Prerequisite: graduate standing or consent of instructor.

**251A Organizational Theory (4).** A prospective on organizational theory and organizational performance in post-industrial societies. Particular emphasis on managerial challenges in organizational settings characterized by high technology and transnational institutions and interactions. Prerequisite: graduate standing or consent of instructor.

**252A The State in Comparative Perspective (4).** Seminar examining the state from theoretical, empirical, comparative perspectives. How the state came into being, the state's role in the economy, toward society and internationally, and in policy-making in Western Europe, East Asian newly industrialized countries, the Third World. Prerequisite: graduate standing or consent of instructor.

**252B The Comparative Method (4).** Examines approaches to research design in comparative political science. Focus is on the uses of the comparative method in both theory and practice. Prerequisite: graduate standing or consent of instructor.

**252C Conditions of Democracy (4).** Analysis of the constitutional, historical, social, economic, and cultural conditions under which democracies can be stable and effective. Readings in the principal works on the subject from deTocqueville to Lipset, Dahl, Almond, and Verba. Prerequisite: graduate standing or consent of instructor.

**260A Research Seminar in Electoral Behavior (4).** Students design and carry out an original research project in the field of electoral behavior, analyzing data from recent national election studies. Emphasis on learning techniques of data analysis and presentation. Prerequisite: graduate standing or consent of instructor.

**260B Political Participation (4).** Examines theoretical approaches to the explanation of the pattern of participation and consideration of the results of empirical studies of such activity by mass publics (mainly in Europe and North America). Addresses issues in both comparative politics and political behavior. Prerequisite: graduate standing or consent of instructor.

**261A Language and Power (4).** Seminar to study a theory of how reality/meaning/knowledge is created in language as a consequence of structure of power. Prerequisite: graduate standing or consent of instructor.

**262A Rationality in Social Science (4).** History of the paradigm, how it has been refined into the cost-benefit model as 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.

**262B 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.

**270A-B-C Seminar in Public Choice I, II, III (4-4-4).** Public Choice lies at the intersection of economics and political science. This course involves the use of tools derived from economics to understand the behavior of governments and of citizens when they deal with politics. Prerequisite: graduate standing and Social Science 111H. Same as Economics 270A-B-C.

**280A Seminar in Political Psychology (4).** Systematic introduction to the psychological study of political behavior. Topics will include: political ideology, communication and persuasion, political socialization, political decision-making, and political participation. Required for graduate students in the Political Psychology concentration. Prerequisite: graduate standing or consent of instructor.

**290 Dissertation Research (4 to 12).** Prerequisite: consent of instructor. May be repeated for credit.

**299 Independent Study (4).** May be repeated for credit.

## THE UNDERGRADUATE MAJOR IN SOCIAL SCIENCE

The major in Social Science provides an interdisciplinary perspective on the study of society, both at the individual and the group level. Using the knowledge and methods of anthropologists, economists, linguists, political scientists, psychologists, and sociologists, a student majoring in Social Science develops the skills to think clearly about social concepts and issues.

Students majoring in Social Science take a core curriculum of introductory courses that (1) compares the various social science disciplines and methods; (2) teaches applied computing methodology; and (3) provides an overview of topics in the social sciences. Each student chooses an area of specialization selected from Multicultural Studies, Public and Community Service, Research and Analytical Methods, or Social Studies. The specialization creates the framework for the remainder of the course work required to complete the degree program.

### REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57-61.

**School Requirements:** See page 325.

#### Requirements for the Major

- A. An understanding of the fundamental concepts, analytical tools, and methods of social science. This requirement is met by taking Social Science 1A, 2A, 3A, and one additional introductory course in the School of Social Sciences bearing a one-digit course number. These courses should be taken during the student's first year.
- B. A decision with respect to area of focus. This requirement is met by declaring a specialization before the end of the junior year.
- C. An understanding of the advanced areas in social science. This requirement is met by satisfying course work requirements as defined for the declared specialization (see below).

*Students are reminded that the Pass/Not Pass option is not applicable to course requirements A through C 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 A through C above are included in the computation of the grade point average in courses required in the major program.

#### Specialization in Multicultural Studies

This specialization examines various American ethnic and cultural communities (African-American, Asian American, Chicano/Latino, and Native American) from an interdisciplinary perspective. It provides students with the understanding necessary to address issues arising from the multicultural environment of the county, state, and nation.

Satisfaction of School requirements and 15 courses (60 units) as follows:

1. Four courses as specified in major requirement A above.
2. Two additional lower-division courses selected from Anthropology 20A, 60A, Linguistics 68, Social Science 70A, 70C, Sociology 63, 65.
3. Six upper-division courses representing at least two departments selected from Anthropology 121D, 125A, 132A, 138M; Political Science 126C, 145B; Psychology 174A-B; Social Science 170A-170H, 172A-172E, 173F-173I, 173K-L, 175A, 175B; Sociology 173.

4. Three additional upper-division courses from the same list, which must address the issues of one particular culture.

#### **Specialization in Public and Community Service**

This specialization prepares students to understand community and governmental issues from a social science perspective. Students participate in several off-campus learning experiences with community-based organizations and government agencies.

Satisfaction of School requirements and 15 courses (60 units) as follows:

1. Four courses as specified in major requirement A above.
2. Six upper-division social science courses in one department (Anthropology, Cognitive Sciences, Economics, Linguistics, Politics and Society, Sociology) or in Women's Studies, African American Studies, Asian American Studies, or Chicano/Latino Studies.
3. Two quarters of off-campus internship experience linked to the selected field above, as specified in the internship guidelines available in the School of Social Sciences Undergraduate Counseling Office.
4. Three quarters, during one academic year, of Social Science 196, Field Study in Multicultural Environments.

#### **Specialization in Research and Analytical Methods**

This specialization creates a more in-depth understanding of social science methods and research. Students with this specialization are well-prepared for graduate or professional programs.

Satisfaction of School requirements and 15 courses (60 units) as follows:

1. Four courses as specified in major requirement A above.
2. Two additional lower-division courses selected from Anthropology 2A, Economics 1, Linguistics 1, Political Science 6A, Psychology 9A, Social Science 70C, Sociology 3.
3. Six upper-division courses, three each from two disciplines, selected from Anthropology 142A, 143A, 171-179; Economics 120-129; Linguistics 100-109, 170; Political Science 131-139; Psychology 110-119; Social Science 100-101; Sociology 110-119. (NOTE: For 1996-97, this requirement can be satisfied by choosing courses from Economics, Political Science, Psychology, or Social Science offerings.)
4. Three additional upper-division courses from the same list.

#### **Specialization in Social Studies**

This specialization provides a broad overview to the social sciences, with an emphasis on maintaining an interdisciplinary perspective. This specialization also helps to prepare students for the K-12 Single Subject Teaching Credential in Social Science.

Satisfaction of School requirements and 15 courses (60 units) as follows:

1. Four courses as specified in major requirement A above.
2. Five other lower-division social science courses, representing at least three Social Sciences departments (Anthropology, Cognitive Sciences, Economics, Linguistics, Politics and Society, Social Science, and Sociology).
3. Six upper-division social science courses, including two courses from Anthropology, Cognitive Sciences, Linguistics, or Sociology, and two courses from Politics and Society or Economics.

### **HONORS PROGRAM IN SOCIAL SCIENCE**

The Honors Program for Social Science majors allows students to engage in research leading to the completion of an Honors thesis. The topic for the Honors thesis, reflecting social science themes, is determined by the student in consultation with a faculty advisor. The Honors Program is composed of three four-unit courses: Social Science H190A (Honors Research Workshop), H190B (Honors Thesis Research), and H190C (Honors Thesis), which satisfies the upper-division writing requirement. Students are introduced to the Honors Program through Social Science 180 (Advanced Seminar in Social Science Research), which serves to review and discuss current research and student interests. The Honors Program is open to all junior and senior Social Science majors with an overall GPA of 3.00 and a 3.30 GPA in at least five Social Science courses.

The schedule of courses for the Honors Program is:

- (1) Each spring quarter, Social Science 180 provides students with an introduction to the Honors Program.
- (2) During the spring quarter of the junior year and over the following summer before the senior year, students formally apply to the Honors Program through the Office of the Associate Dean, Undergraduate Studies, School of Social Sciences.
- (3) In the fall quarter of the senior year, students enroll in H190A. This course ends with each student having formulated a written research plan for the honors thesis. Students also select a faculty member who has agreed to supervise the research and evaluate the Honors thesis.
- (4) In the winter quarter of the senior year, students enroll in H190B with their faculty advisor, who supervises and evaluates data collection and analysis.
- (5) In the spring quarter of the senior year, each student enrolls in H190C with their faculty advisor to complete the Honors thesis.

### **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).** Introduction to social science research and analytical models. Theory construction and use of research methods in an interdisciplinary context. Discussion of the application of social science research to public policy. Computer laboratories develop creative thinking, graphing, and data presentation skills. (III)

**H1E-F-G Honors: Critical Issues in the Social Sciences (6-6-6) F, W, S.** Major themes, methods, and works in the social sciences from an interdisciplinary perspective. Each quarter focuses on a different topic. Weekly small seminars emphasizing the development of the skills of critical thinking and quantitative analysis through regular written work are integral to the course. Prerequisite: restricted to members of the Campuswide Honors Program. Same as Social Ecology H20A-B-C. (III)

**2A Principles in the Social Sciences (4) W.** Introduction to various disciplines within the social sciences. Provides an interdisciplinary perspective on understanding human behavior and social institutions, including interpersonal, economic, political, and cultural activities. For those students desiring a broad introduction to the social sciences. (III)

**3A Computer-Based Research in the Social Sciences (4) W.** Focuses on the data manipulation, data visualization, and information searching techniques that are becoming increasingly popular and important as we move into the twenty-first century. Hands-on experience in hypothesis testing, mapping, graphics, and data arrays. Prerequisite: lower-division standing or consent of instructor.

**10A Probability and Statistics in the Social Sciences I (4) F.** Introduction to the variety of statistical applications in the social sciences. Descriptive statistics. Measures of central tendency and dispersion. Percentile ranks. Standardization and normal approximation. Basic probability theory focuses on application to statistical inference and binomial distribution. Students who receive credit for Social Science 10A may not receive credit for Anthropology 10A, Economics 10A, Psychology 10A, Social Ecology 13, or Sociology 10A. (V)

**10B Probability and Statistics in the Social Sciences II (4) W.** Introduction to statistical inference, sampling distribution, standard error. Hypothesis tests for proportions and means. Inferential techniques for nominal variables including chi-square, study measures of strengths, significance of relationships between variables, assumptions, data requirements, and types of error in significance tests. Prerequisite: Social Sciences 10A. Students who receive credit for Social Science 10B may not receive credit for Anthropology 10B, Economics 10B, Psychology 10B, Social Ecology 13, or Sociology 10B. (V)

**10C Probability and Statistics in the Social Sciences III (4) S.** Focus on correlation, regression, and control for effects of variables. One-way and two-way factorial analysis of variance. *A priori* and *a posteriori* comparisons. Introduction to repeated measures design and non-parametric statistics. Discuss use of statistics in newspapers and popular magazines. Prerequisite: Social Sciences 10B. Students who receive credit for Social Science 10C may not receive credit for Anthropology 10C, Economics 10C, Psychology 10C, Social Ecology 13, or Sociology 10C. (V)

**13A 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 Linguistics 80. (III)

**16A Current Topics in Global Peace and Conflict Studies (2).** Topics focus on the perspectives of academic disciplines that examine global issues, bilateral and multilateral relations, and issues related to regions or countries. Students choose seminar subjects, prepare opening remarks, and lead discussions with a faculty member or guest lecturer.

**70A 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 20A. (III, VII-A)

**70B Introduction to Expressive Forms in American Society (4).** A survey of the expressive forms of minority culture groups in the United States. Literature, music, visual art, ritual, and folklore are studied, with an emphasis upon understanding their relationship to their social and cultural contexts. Formerly Comparative Culture 20B. (III, VII-A)

**70C Comparing Cultures (4).** Introduces students to the scope of cross-cultural comparisons by analyzing the theories, methodologies, and facts utilized by anthropologists, sociologists, social psychologists, political scientists, and historians in comparing cultures. Formerly Comparative Culture 20C. (III, VII-A)

**70T 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 21A. (VII-A)

**78A Introduction to Asian American Studies I (4).** Examines and compares the diverse experiences of major Asian American groups since the mid-nineteenth century. Topics include: origins of emigration; the formation and transformation of community; gender and family life; changing roles of Asian Americans in American society. Same as History 15C and Humanities 60A. (VII-A)

**78B Introduction to Asian American Studies II (4).** Examines the renewal of Asian immigration following World War II. Focuses on domestic and international conditions influencing the liberalization of U.S. immigration laws, and the impact of contemporary Asian immigration on the U.S. political economy and social order. Same as Humanities 60B. (VII-A)

**78C Introduction to Asian American Studies III (4).** Examines selected substantive, methodological and/or theoretical issues in Asian American Studies. Possible topics include interracial dating and marriage, electoral politics, educational and occupational achievement, participant community research, uses of oral history, underrepresented Asian American ethnic

groups, and diasporic groups. Prerequisites: Social Sciences 78A and 78B. Same as Humanities 60C. (VII-A)

**89A-Z Special Topics in Social Sciences (2 to 4).** May be repeated for credit as topic varies.

## UPPER-DIVISION

**100A-B-C Foundations of Applied Statistics I, II, III (4-4-4).** Lecture, four hours; laboratory, three hours. **100A-B:** Descriptive statistical concepts and techniques most widely used in social science research. Weekly laboratories employ computer graphics to investigate concepts. Pass/Not Pass only grading for 100A. **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. 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.

**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 Data Collection and Analysis 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.

**170A Scope and Problems of Interdisciplinary Study (4).** An exploration of the problems of interdisciplinary scholarship and the interrelationship among social science and humanities disciplines. Empirically, focus on the American Puritans. Formerly Comparative Culture 100D.

**170B Philosophy of Culture (4).** Introduction to philosophies of culture that have been formulated by philosophers, historians, anthropologists, and sociologists. Intended to provide an understanding of the cultural concept in order to study culture acquisition and the diverse culture of the U.S. Formerly Comparative Culture 100E. (VII-A)

**170C Economics and Culture (4).** 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 120A. (VII-A)

**170D Politics and Culture (4).** Examination of the factors affecting the formation and structure of political/labor movements among racial/ethnic groups in the United States. Relationship of domestic movements to international developments is also analyzed. Formerly Comparative Culture 120C.

**170E 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 120D. (VII-A)

**170F 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 120F. (VII-A)



**170G 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 130C.

**170H 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 130G.

**171A Cultural Analysis of Literature (4).** How the literature of minority American cultures can be studied as a cultural document. Focus on how culture affects the creation of literature. Formerly Comparative Culture 130A.

**171F 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 130H. (VII-A)

**172A American Culture (4).** A survey of the historical development of dominant American culture and society; emphasis on a close reading of key cultural texts, with weekly text as a model of writing examining its use of language and rhetoric. Prerequisite: satisfactory completion of the lower-division writing requirement. Formerly Comparative Culture 140A.

**172B 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 140B. (VII-A)

**172C Asian-American Culture (4).** A survey of socio-political-economic dimensions of Asian-American people: their past, present, and future. Formerly Comparative Culture 140C. (VII-A)

**172D 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 140D. (VII-A)

**172E 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 140E. (VII-A)

**172F Latin American Culture I (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. (VII-B)

**172G Latin American Culture II (4).** Specific aspects of economic and cultural transactions between the United States and Latin America. Topics include: U.S.-sponsored economic models for Latin America; integration versus regionalization in economic policy; theories of dependency and imperialism; Initiative for the Americas; NAFTA. Prerequisites: Social Sciences 172F and consent of instructor.

**173F 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. Social Sciences 173F and History 151B may not both be taken for credit. (VII-A)

**173G Film Media and the Latino Community (4).** Uses film as a resource for understanding contemporary issues and problems facing the Chicano/Latino community. (Does not study cinema as a genre.) Formerly Comparative Culture 130J. (VII-A)

**173H History of Chicano Education (4).** Examines the relationship between the development of the public education system and the Chicano community in the U.S. Formerly Comparative Culture 120H. (VII-A)

**173I Perspectives on the U.S.-Mexican Border (4).** Economic aspects of the historical development of the U.S.-Mexican border. The current economic situation in the Southwest and border areas as it affects both Mexico and the Latino/Chicano population is also examined. Formerly Comparative Culture 120B. (VII-A)

**173K Comparative Latino Populations I (4).** Provides foundation for understanding of Chicano/Latino Studies as an interdisciplinary field of inquiry. Focus on the history, arts, cultures of distinct (Mexican, Cuban, Puerto Rican, Central American) Latino communities. Topics include: pre-colonial history and culture, conquest, mestizaje, colonialism/neocolonialism, resistance. (VII-A)

**173L Comparative Latino Populations II (4).** Focus on demographics, sociology, politics, and global setting of distinct (Mexican, Cuban, Puerto Rican, Central American) Latino communities. Topics include: immigration, demographics, socioeconomic status, family structure, political protest, law and policy, and links to homeland issues. Prerequisite: Social Sciences 173K. (VII-A)

**173M Comparative Latino Populations III (4).** Continuation of Social Sciences 173K-L taught as a writing workshop. Integrates methods with topics of previous two quarters. Student develops own project, writes and presents research paper on Chicano/Latino Studies, engages in peer editing and criticism of early drafts. Prerequisite: Social Sciences 173K-L; satisfaction of the lower-division writing requirement; consent of instructor.

**175A 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 130B. (VII-A)

**175B 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 120E. (VII-A)

**176A Afro-Latin American Music (4).** Musical culture of Afro-Latin American peoples, emphasizing Spanish-speaking Caribbean. Topics include: background in West Africa, the persistence of traditions in the Caribbean, the commercial music of the twentieth century, the connections between musical culture, religion, and the economy. Formerly Comparative Culture 130F. (VII-B)

**178A Perspectives on Race and Ethnicity in the United States (4).** Examines the debates surrounding the use of race and ethnicity in U.S. scholarship. Discussions focus on differing conceptions of both terms, the changes in relationship between the two concepts since the end of the nineteenth century, and specific theoretical formulations particularly in relation to the experience of Asian Americans.

**178B Asian American Women (4).** Examines the representations and experiences of Asian American women from diverse perspectives. Explores the commonalities and differences among various groups of Asian American women, with particular focus on history, culture, values, and family roles. (VII-A)

**178C The Korean American Experience (4).** Explores the factors that have distinctly shaped the Korean American experience, including patterns of racial domination, the profile of immigrant flow, immigrant roles in the urban political economy, politics in Korea, and the role of the church. (VII-A)

**178D The Vietnamese American Experience (4).** Studies the resettlement of Vietnamese in the United States following their exodus from Southeast Asia. Topics discussed include the Vietnam War, the 1975 evacuation, boat and land refugees, the shaping of Vietnamese communities, and Vietnamese American literature. (VII-A)

**178E The Japanese American Experience (4).** Studies the settlement of Japanese in Hawaii and the continental United States since the late nineteenth century. Topics covered include sugar plantations, development of rural Japanese America, World War II internment, post-War community development, and persistence of Japanese American identity. (VII-A)

**180 Advanced Seminar in Social Science Research (4).** Explores topics for students who are interested in the Honors Program for Social Science majors. Invited speakers present a breadth of research relevant to the social sciences. Prerequisite: Social Science major; upper-division standing.

**182A Exploring Society Through Photography (4).** Students explore society through presentation, interpretation, and discussion of their own photographs. A few common exercises at the beginning of the quarter are followed by individual projects. Photography as social observation and the relation of photographs in an essay are stressed. Prerequisite: basic darkroom techniques. Same as Anthropology 176A and Sociology 114A.

**184A-B Senior Seminar on Peace and Conflict I, II (2-4) F, W.** Students attend weekly seminar to discuss current global issues in conflict, cooperation, and peace. Weekly attendance at GPACS Forum required. Seminar is used to analyze Forum presentations and to prepare senior research paper. **184A:** Prepare bibliography. **184B:** Prepare research proposal. Seniors only. Same as Humanities 181A-B and Social Ecology 185A-B.



**184C Senior Seminar on Peace and Conflict III (4) S.** Continuation of Social Sciences 184A-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. Seniors only. Same as Humanities 181C and Social Ecology 185C.

**184D Global Peace and Conflict Studies: Current Topics (2).** Topics focus on the perspectives of academic disciplines that examine global issues, bilateral and multilateral relations, and issues related to regions or countries. Students choose seminar subjects, prepare opening remarks, and lead discussions with a faculty member or guest lecturer. May be taken for credit four times as topics vary.

**185 People in Society (4).** Through readings about people in distinctly different societies throughout history, students learn concepts that cross the boundaries of the social science disciplines. Such themes as democracy, elitism, power, social class, race, gender are used as basis for discussion and writing. Prerequisite: satisfaction of lower-division writing requirement.

**187 Twenty-First-Century Graduate Education (2).** Discussion of graduate and professional education in twenty-first century United States. Examines specific strategies for admission to postbaccalaureate programs and success in graduate study culture. Introduction to processes including planning and preparation, school selection, entrance examination preparation, submission of applications, writing personal statements. Pass/Not Pass only.

**188 Global Issues and International Perspectives (2).** Primarily for students planning to study abroad. Weekly guest lectures, giving global perspectives on culture, politics, economics, women's roles, environmental issues, language, and history. In discussion sections participants study the particular area to which they are going, and learn how to conduct themselves while there. Pass/Not Pass Only. Same as Social Ecology 188.

**189A-Z Special Topics in Social Sciences (2 to 4).** May be repeated for credit as topic varies.

**H190A Honors Research Workshop (4).** The student develops a prospectus of research for the honors thesis. The prospectus, 20-25 pages in length, includes: the research question, literature review, methods of investigation, and bibliography. Prerequisite: acceptance into the Honors Program for Social Science majors.

**H190B Honors Thesis Research (4).** The student initiates and completes data collection for the honors thesis. Faculty advisors provide supervision and feedback on thesis chapters. Prerequisite: Social Sciences H190A.

**H190C Honors Thesis (4).** The student completes, with an advisor, an honors thesis containing: statement of the problem, literature review, research hypotheses, methods of investigation, results, discussion, and bibliography. Prerequisite: Social Sciences H190B and satisfactory completion of the lower-division writing requirement.

**H190E-F Honors: Senior Thesis Research I, II (4-4).** Students conduct research toward preparation of an Honors Thesis under supervision of designated faculty. Restricted to Campuswide Honors Program participants.

**H190G Honors: Senior Thesis (4).** Students write an Honors Thesis with the consultation of their thesis advisor. Prerequisites: Social Science H190E-F.

**195 Applied Social Science Research (4) F, W, S.** Allows students the opportunity to apply classroom knowledge to projects in local businesses and agencies. Groups of five to ten students work with faculty and graduate students to research and propose solutions to agency-posed questions. Prerequisites: completion of lower-division writing requirement and consent of instructor. Limited to School of Social Sciences majors. May be taken for credit three times.

**196A-B-C Field Studies in a Multicultural Environment (4-4-4).** Emphasis on applied multicultural education in urban schools and community-based organizations. Students examine social, cultural, psychological, economic, and linguistic phenomena while providing academic support in elementary and secondary schools with large populations of underrepresented students. Prerequisite: upper-division standing; consent of instructor. Formerly Comparative Culture 197A-B-C.

**197A-Z Field Study (2 to 4) F, W, S.** Opportunities to apply knowledge and learn new skills outside of the normal classroom environment. Students participate in on-campus or off-campus activities under a written agreement with a supervising UCI instructor. Prerequisite: consent of instructor. May be taken for credit 12 times.

**198 Group Independent Study (2 to 4) F, W, S.** Students participate in independent study under a written agreement with a supervising UCI instructor. Prerequisite: consent of instructor. May be repeated for credit for a total of 12 units.

**199 Independent Study (2 to 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

4215 Social Sciences II; (714) 824-7637

Francesca M. Cancian, **Department Chair**

### Undergraduate Program

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.

### REQUIREMENTS FOR THE BACHELOR'S DEGREE

**University Requirements:** See pages 57-61.

**School Requirements:** See page 325.

#### 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 a thesis.
- D. Five courses selected from the following list of core courses, no more than two of which may be lower-division: Sociology 31, 41, 43, 44, 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.

#### Honors Program in Sociology

The Honors Program in Sociology is open to outstanding Sociology majors during their junior and senior year. To gain admission to the program, potential Honors students normally take Sociology courses in theory (Sociology 120), methods (Sociology 110), statistics (Sociology 10A-B-C) and at least two Sociology core courses. Students who receive an average grade of 3.5 or better in these five courses (including one of three statistics courses) are eligible for the Honors program. In addition, Honors students should have an average of 3.2 or better in all courses taken at UCI. Majors who are transfers may petition for entry into the program based on their grades from their former schools.

During their senior year, Honors Program students write a thesis, designed and carried out under faculty supervision. Projects normally entail some empirical analysis of sociological data. Students meet regularly in a two-quarter Honors seminar (Sociology H188A and H188B; satisfies Sociology major requirement C) to design and

carry out these projects, to exchange ideas, and to help analyze each other's work. In addition, Honors students are required to attend between six to nine Sociology guest lectures and subsequent meetings to discuss relevant sociological issues. Upon successful completion of the program, students graduate with Honors in Sociology.

### Sociology Minor Requirements

Requirements for the minor in Sociology are met by taking seven sociology courses (28 units) as specified below:

- A. Sociology 1 and either 2 or 3.
- B. One course in methods 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.

## Graduate Program

The Department of Sociology administers graduate programs in Social Networks and Social Relations, in conjunction with the Department of Anthropology; see pages 364-365.

## 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. (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. (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. (V)

**19 Special Topics: Methods (4).** Prerequisites vary. May be repeated for credit as topic varies.

#### THEORY

**23 Understanding Social Facts (4).** Focus on perspectives toward the question of what constitutes sociological knowledge and processes through which competent investigators have built sociological arguments from data. Examination of several types of research techniques. (III)

**24 Authority Relations (4).** An analysis of the nature, ubiquity, and types of authority relations. Examines the conditions for and bases of compliance and rebellion; authority behavior in families, schools, work groups, politics, and "deviant" subcultures such as the Mafia. (III)

**29 Special Topics: Theory (4).** Prerequisites vary. May be repeated for credit as topic varies.

### SOCIAL PSYCHOLOGY

**31 Introduction to Social Psychology (4).** Studies sociological contributions to theory and research in social psychology, with focus on the social influences on personality, attitudes, beliefs, and behavior; socialization, human groups, and social interaction. Same as Psychology 78A. (III)

**39 Special Topics: Social Psychology (4).** Prerequisites vary. May be repeated for credit as topic varies.

### 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.

**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.

**44 Populations (4).** Demographic aspects of social/economic change. Considers the epidemiological transition to low mortality, the historical decline in Western family size, the baby boom, third-world family planning, changing marriage patterns, women's labor force participation, migration theories, and global aging. (VII-B)

**49 Special Topics: Structures (4).** Prerequisites vary. May be repeated for credit as topic varies.

### SOCIAL INSTITUTIONS AND CULTURE

**55 Mass Media and American Society (4).** Examines the social implications of the fundamental changes in the organization and structure of American mass media since World War II, including the demise of big-city newspapers, the rise of broadcast television, and the fragmentation of radio and magazine markets. Explores the potential implications of emerging technologies—cable, telecast, and direct broadcast satellite (DBS)—on American culture and institutions.

**56 Society and Religion (4).** A critical and personal examination of the varieties of religious and spiritual experiences human beings are undergoing in contemporary society. The role of conscious understanding and unconscious conditioning regarding religion and spirituality.

**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.

**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.

**62 Marriage and Families (4).** Sociological theories and research on marriage, kinship, intimacy, and divorce. Emphasis on comparing family patterns in different social classes, ethnic groups, and societies, and on relating family life to the economy and other social institutions. Topics include gender roles, child-rearing, historical change. (III)

**63 Race and Ethnicity (4).** 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)

**64A Social Psychology of Family and Close Relationships (4).** Analysis of the social psychology of family life: close relationships, courtships, marriage and family interaction in American society; examination of processes of preparation for marriage, role differentiation, communication, conflict, integration and socialization within the family: the psychodynamics of family life.

**65 Cultures in Collision: Indian-White Relations Since Columbus (4).** An introductory survey of topics such as: indigenous religious belief and socio-political organization, stereotypic "images," intermarriage, the fur trade, Native leaders, warfare, and contemporary issues. Slides, films, and trips to local museums enhance student learning. Same as Anthropology 85A. (VII-A)

**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.

**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.

**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. (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. Social Ecology 10 and Sociology 110 may not both be taken for credit.

**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 how people create a supportive network of relations in modern society. Prerequisite: consent of instructor. Same as Women's Studies 183B.

**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.

**114A Exploring Society Through Photography (4).** Students explore society through presentation, interpretation, and discussion of their own photographs. A few common exercises at the beginning of the quarter are followed by individual projects. Photography as social observation and the relation of photographs in an essay are stressed. Prerequisite: basic darkroom techniques. Same as Anthropology 176A and Social Science 182A.

**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.

**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.

**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.

**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.

**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.

**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 Political Science 233A.

**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.

**143 Social Networks and Social Support (4).** Examines the manner in which behaviors and attitudes of individuals are affected by their network ties to others. How are peoples' opportunities and well-being increased or decreased by their social networks? What are the processes involved? Topics vary and may include studies in mental and physical health, job seeking, separation and loss, and aging.

**144 Political Sociology (4).** Includes an examination of the major theoretical approaches to political sociology, and the application of these ideas to the politics of advanced capitalist societies. Also considers stability and change in power structures.

**145 Occupations and Professions (4).** What makes some jobs satisfying and others boring? How does technology influence the workplace? What changes are coming in the U.S. job market? Sociology and psychology of occupations. Students interview workers and study aspects of their occupations. Prerequisite: upper-division standing.

**147A Cities and Social Change (4).** Focuses on comparative urban political economy and the way cities and urban process are linked to changes in the global system. Attempts to draw on a diverse interdisciplinary literature that includes sociology, geography, and urban planning. Prerequisite: upper-division standing and completion of lower-division writing requirement.

**149 Special Topics: Structures (4).** Prerequisites vary. May be repeated for credit as topic varies.

**SOCIAL INSTITUTIONS AND CULTURE**

**152 Sociology and Psychology of the Arts (4).** Explores the relationship between artists and the "art world" through which artistic activity is defined, supported, and consumed. Empirical studies in the plastic arts, performing arts, and literature are used to examine varieties of aesthetic expressions. Prerequisite: upper-division standing; authorization required.

**153 Sociology of Science (4).** Empirical studies 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.

**155 Mass Communications (4).** An examination of the origin, history, and functions of mass communications and its effect on social life.

**156 Deviance (4).** Perspectives on deviance and criminality in behavior, institution, community, and myth. The suitability of contemporary theories of deviant behavior. Open to majors only. Same as Psychology 178D and Criminology, Law and Society J107.

**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).** Concepts of gender roles and the impact of gender on women and men. Theoretical and academic research of social experiences. Historical analysis of American gender roles, sexual politics, negative and positive aspects, and evaluation of current trends and future implications. Women of color. Same as Women's Studies 183C. (VII-A)

**164 Sociology of Age (4).** Introduction to sociology of age, aging, and the aged. Problems posed by aging population. Life course transitions. How social organizations influence the life course. Work, health, family in later life. Prerequisite: upper-division standing.

**165A Social Inequality: Anthropological Perspectives (4).** Social status, power, and economic differences; race, ethnicity, and gender in comparative perspective. Anthropological and sociological studies of us and other people used to increase understanding of the contemporary United States. Prerequisite: one course in Anthropology, Economics, Political Science, or Sociology. Same as Anthropology 121H. (VII-B)

**166A Sociology of Childhood (4).** The child's place in society historically, cross-nationally, and in the contemporary United States. Childhood socialization, social class, and ethnic variation are addressed, as well as social problems and recommendations for social policy regarding children.

**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.

**169 Special Topics: Age, Gender, Race, and Ethnicity (4).** Prerequisites vary. May be repeated for credit as topic varies.

**SOCIETIES AND SOCIAL INEQUALITY**

**172E 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 132E. Students may not receive credit for both Sociology 72/Political Science 32A and Sociology 172E/Political Science 132F.

**172F American Society (4).** Seminar examines recent trends in U.S. institutions such as family, community, labor, economy, media, schools, religion, criminal justice, medicine, politics, popular culture. Special attention to race, immigration, childhood, aging. Cross-national comparisons.

**173 Social Stratification (4).** Sources, functions, and dynamics of the unequal distribution of wealth, prestige, knowledge, and power in American and other societies.

**174 Social Movements and Collective Behavior (4).** A survey of models of collective action drawn from sociology, economics, psychology, and political science. Focus on areas such as social movements, strikes, crowd psychology, cults, fads, fashions, public opinion, and symbolic and mythical elements in collective culture. Prerequisite: Economics 1, Political Science 6A, or Sociology 1. Same as Political Science 156D.

**175A Korean Society and Culture (4).** Introductory background to the social and cultural forces that affect the lives of the Koreans, including those in the United States. Considers traditional values and contemporary issues within a historical framework. Same as Anthropology 163K and East Asian Languages and Literatures 130. (VII-B)

**175B 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 culture. (VII-B)

**175C 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.

**176 Social Policy (4).** Comparison of theoretical perspectives on the role of the state in contemporary society and an examination of the gender, racial-ethnic, and class dimensions of social policy. Particular focus on social welfare, labor, health policies, and policies on sexual violence.

**177A East-Central European Societies (4).** An introductory "area studies" course which examines some of the basic concepts that help us understand the workings of state socialism and the transition from state socialism in the societies of East-Central Europe. Lectures and class discussion. Readings from multiple disciplines. (VII-B)

**177B The Other Europe (4).** Highlights the rich and complex experience of East-Central European societies by analyzing some great films (shown in class) and novels. Students' creative participation is strongly encouraged. Weekly writing assignments. Prerequisites: satisfactory completion of the lower-division writing requirement; upper-division standing. Open only to majors in the School of Social Sciences.

**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 Women's Studies 183A.

**179 Special Topics: Societies and Social Inequality (4).** Prerequisites vary. May be repeated for credit as topic varies.

**RESEARCH AND HONORS**

**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.

**H188A-B Honors Research and Thesis (4-4).** Focuses on the design and implementation of individual research projects undertaken by senior Sociology majors. Writing projects consist of a proposal and paper on some empirical research. Prerequisites: consent of instructor and honors status.

**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 PROGRAM IN SOCIAL SCIENCES

The School offers graduate programs leading to the Ph.D. in Social Sciences with concentrations in Mathematical Behavioral Science, Social Networks, and Social Relations. Each program is administered by a different group of faculty.

### Concentration in Mathematical Behavioral Science

#### Participating Faculty

Dennis J. Aigner: Applied econometrics, statistics, operations research  
 William Batchelder: Mathematical models, measurement, and cognitive processes  
 Bruce Bennett: Algebraic geometry, theory of perception  
 John P. Boyd: Mathematical anthropology and systems theory  
 Myron Braunstein: Visual perception and computer applications  
 David Brownstone: Econometrics and industrial organization  
 Michael Burton: Economic anthropology; gender, family, and households; cognitive anthropology; Africa, Oceania  
 Soo Hong Chêw: Economics of information and uncertainty, preference theory  
 Carol Cicerone: Visual perception and the physiological bases of visual perception, with emphasis on human color vision and retinal mechanisms of sensitivity regulation  
 Linda Cohen: Political economy, social choice, government regulation and government policy toward research and development  
 Arthur S. DeVany: Theory of markets, transportation, labor economics, industrial organizations  
 John E. DiNardo: Labor economics, development economics, applied economics  
 Barbara Doshier: Memory, information processing, perception  
 Michael D'Zmura: Vision research  
 Jean-Claude Falmagne: Mathematical psychology  
 Linton C. Freeman: Network models of social structure  
 Michelle Garfinkel: Macroeconomic and monetary theory  
 Amihai Glazer: Public choice, especially concerning commitment problems  
 Bernard N. Grofman: Mathematical models of collective decision making, formal democratic theory, sequential decision making, politics of small groups  
 Donald Hoffman: Artificial intelligence approaches to human and machine vision, recovery of three-dimensional structure from image motion, visual recognition of objects by their shape  
 Tarow Indow: Mathematical models in visual space, color space, and human memory  
 Geoffrey Iverson: Cognitive science and mathematical models  
 Robin Keller: Decision analysis, risk analysis, problem structuring, management science  
 David LaBerge: Attention, pattern identification and language processing  
 Jaewoo Lee: Process and exchange rates, investment, economic fluctuations  
 Sung-Chull Lee: Mathematical modeling in social sciences, conflict resolution, East Asian politics  
 David M. Lilien: Macroeconomics, labor economics and applied econometrics  
 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  
 Brian Skyrms: Philosophy of science, metaphysics  
 Kenneth A. Small: Urban economics, transportation economics, discrete-choice econometrics, energy  
 George Sperling: Vision, perception, information processing  
 Carole J. Uhlaner: Comparative political participation, formal models of political behavior  
 Christian Werner: Mathematical geography  
 Douglas White: Social networks, longitudinal social demography  
 Charles E. Wright: Skill acquisition and generalization, human motor behavior, visual attention  
 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. The Institute for Mathematical Behavioral Sciences, an Organized Research Unit, provides research opportunities for graduate students.

The program leads to a Ph.D. in Social Sciences with a concentration in Mathematical Behavioral Science.

#### 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 calculus 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.

**Quantitative/Mathematical.** 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.

**Language/Computer.** All students must be sufficiently familiar with various computer programs and languages to be able to conduct serious research in their field of interest and must submit either proposed courses or some demonstration of competency as part of their plan of study. In addition, students must either (1) attain proficiency in reading social science technical publications in one foreign language or (2) demonstrate proficiency in computer programming considerably beyond that of the standard computer requirement. Because of the continually changing nature of computer languages and software, the conditions for fulfilling this additional computer expertise requirement will be left to the judgment of the faculty subcommittee on computers of the Ph.D. program.

**Substantive Minor.** Students are expected to develop considerable expertise in some substantive field 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.

**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 in any School of Social Science program 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 Science courses, normally including the core requirement in mathematical statistics.

## Concentration in Social Networks

### Participating Faculty

William Batchelder: Mathematical models, measurement, and cognitive processes  
 Duran Bell: Formal models of social relations, economic anthropology, formal analysis of inter- and intra-group resource allocation process  
 James S. Boster: Cognitive anthropology, social networks, study of intracultural variation, ethnopsychology, ethnobiology  
 John P. Boyd: Mathematical anthropology and systems theory  
 R. Duncan Luce: Mathematical behavioral science  
 A. Kimball Romney: Experimental and psychological anthropology  
 Danching Ruan: Personal networks, networks in China  
 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.

The program leads to a Ph.D. in Social Sciences with a concentration in Social Networks.

### 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), 241A (Interaction Models), and 241B (Network Theories of Social Structure). 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  
 Victoria Bernal: Economic development, peasants, gender, political economy, Africa, Muslim societies  
 József Böröcz: Comparative international sociology, development, state socialism and its demise, tourism, social change, east-central Europe  
 James S. Boster: Cognitive anthropology, social networks, study of intracultural variation, ethnopsychology, ethnobiology  
 John P. Boyd: Mathematical anthropology and systems theory  
 Michael L. Burton: Economic anthropology; gender, family, and households; cognitive anthropology; Africa, Oceania  
 Teresa Caldeira: Urban violence; spatial segregation and urban changes in multicultural societies; citizenship, individual rights, and conceptions of the body; racism; gender, critical urban studies, and contemporary developments in social theory; Brazil  
 Francesca M. Cancian: Gender sociology of the family, peace and war  
 Frank Cancian: Social stratification, economic anthropology, Mexico  
 Leo R. Chávez: 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  
 Robert Garfias: Expressive culture, ethnomusicology, politics and the arts, Japan, Burma  
 Susan Greenhalgh: Political economy, transnational studies, feminism/gender, politics of reproduction, critical demography, disciplinarity, China, Taiwan, Pacific Rim  
 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  
 Liisa Malkki: Historical anthropology, ethnicity and nationalism, refugees and exiles, east and central Africa  
 Duane Metzger: Cognitive anthropology, belief systems and semantic analysis  
 Nancy Naples: Women in poverty, sexual abuse, women's community activism

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  
 Roger Walsh: Asian psychologies, philosophies and religions, meditation, exceptional psychological health, consciousness, contemporary global crisis

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.

The program leads to a Ph.D. in Social Sciences with a concentration in Social Relations.

A graduate emphasis in Feminist Studies also is available. Refer to the Women's Studies section of the *Catalogue* for information.

### 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 two quarters 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 in Social Sciences

### SOCIAL SCIENCES

**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. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 222A, and Social Sciences 241C and 256A.

**202A Graph Theory with Applications (4).** Introduction to graph theory. A graph is a collection of "vertices," some pairs of which are joined by "edges." Discusses both theoretical results and applications. Graphs have many applications in social and natural sciences. Prerequisite: consent of instructor. Same as Social Science 242F.

**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.

**207A-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. Prerequisite: graduate standing. Same as Social Science 256H-I-J.

**208A-B Workshop on Dissertation Writing I, II (2-2).** 208A: Introduction to library-based social science research in the electronic age. Overview of research library collections, book trade, and information dissemination.

208B: Data-based social science research introduction. Covers data collection, data preparation, and data sharing. Prerequisite: graduate standing or consent of instructor.

**209A-Z Special Topics in Mathematical Social Science (4).** Current research in Mathematical Social Science. Topics vary.

**239A, B, C Special Topics: Comparative Culture (4, 4, 4).** Current research in comparative culture. Topics vary from quarter. Prerequisite: graduate standing or consent of instructor. Formerly Comparative Culture 239A-Z.



## SOCIAL NETWORKS

**240A-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. Satisfactory/Unsatisfactory only. Prerequisite: graduate standing or consent of instructor.

**241A Interaction Models (4).** Human groups can be considered as finite systems of individuals, some of whom interact in pairs. These pairs are used to model such phenomena as clique formation. Prerequisite: graduate standing or consent of instructor.

**241B 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. Defines social structure, processes that generate structures, and behavioral consequences of structural rather than individual dispositional properties. Prerequisite: graduate standing or consent of instructor.

**241C 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. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 222A, and Social Science 201G and 256A.

**242A 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. Prerequisite: graduate standing or consent of instructor.

**242B Algebraic Theories in the Social Sciences (4).** Various applications of abstract algebra to the social sciences. Examples drawn from pattern recognition (group theory), formal languages and social relations (semigroups and lattices), and the problems of inducing structure from data. Requires some mathematical maturity, but no specific knowledge. Prerequisites: Mathematics 2A-B-C or equivalent; graduate standing or consent of instructor.

**242C 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. Prerequisite: consent of instructor.

**242D 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.

**242E Kinship Structures (4).** The kinship systems of the world offer many interesting structures for algebraic analysis, such as the Australian marriage class systems using the theory of permutation groups, and the Crow-Omaha using semigroups. Other models will also be considered. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 233A and Social Science 253C.

**242F Graph Theory with Applications (4).** Introduction to graph theory. A graph is a collection of "vertices," some pairs of which are joined by "edges." Discusses both theoretical results and applications. Graphs have many applications in social and natural science. Prerequisite: consent of instructor. Same as Social Science 202A.

**249A Special Topics in Social Networks (4) F, W, S.** Current research in Social Networks. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

## SOCIAL RELATIONS

### PROSEMINARS AND COLLOQUIA

**250A Proseminar in Social Relations I (4) F.** Introduces first-year graduate students to current research of Social Relations faculty and related issues. Required for first-year graduate students in Social Relations. Prerequisite: graduate standing or consent of instructor.

**250B Proseminar in Social Relations II (4) S.** Concentrates on project definition, literature review, and proposal writing for student projects. Required for first-year graduate students in Social Relations. Prerequisites: Social Science 250A; graduate standing or consent of instructor.

**250C Proseminar in Social Relations III (4) F.** Concentrates on field research, data gathering, and analysis for student projects. Research ethics and human subjects procedures are also covered. Required for second-year

Social Relations graduate students. Prerequisites: Social Science 250B; graduate standing.

**250D Proseminar in Social Relations IV (4) W.** Data analysis and report preparation for student projects. Required for second-year Social Relations graduate students. Prerequisites: Social Science 250C; graduate standing.

**250R-S-T 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. Prerequisite: graduate standing or consent of instructor.

**250X-Y-Z 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.

### COGNITIVE ANTHROPOLOGY AND THE STUDY OF CULTURE

**251A Anthropology and History (4).** An examination of the complex, long-standing relationship between anthropology and history. Themes include: history, culture, and colonialism; history and the power to represent; nostalgia and the uses of the past in struggles over "national history." Prerequisite: graduate standing or consent of instructor. Same as Anthropology 230A.

**252D Cognitive Anthropology (4).** Cognitive Anthropology studies how people classify, reason, and make decisions in a cultural context. Explores how cultural knowledge is organized, how members of society come to collective understandings of the world, and what variation reveals about how individuals learn. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 231A.

**252F Cultural Studies and Ethnography (4).** Examines, from the standpoint of anthropology, areas of recent innovation in "cultural studies," including studies of popular culture, media, consumption, and subcultures. Selected theoretical approaches in these areas are brought into a dialogue with anthropological and ethnographic approaches and methods. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 243A.

**252G Structuralism and Post-Structuralism (4).** Traces recent theoretical discussions and arguments over the philosophical and historical "subject" from structuralist decenterings toward the characteristically "post-structuralist" contemporary concern with the historical and political constitution of subjectivities and subject positions. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 247A.

### CULTURE AND HEALTH PRACTICES

**252O 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. Same as Anthropology 232A.

### FAMILY AND GENDER

**253A Family and Life History (4).** Interdisciplinary and comparative work in family and life history. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 221A.

**253B Feminist Theory (4).** Analyzes current theoretical debates in feminist research, primarily in the social sciences. What is a useful definition of feminism? How can we integrate gender, class, and race? Do we need special research methods to explore feminist questions? Prerequisite: graduate standing or consent of instructor.

**253C Kinship Structures (4).** The kinship systems of the world offer many interesting structures for algebraic analysis, such as the Australian marriage class systems using the theory of permutation groups, and the Crow-Omaha using semigroups. Other models will also be considered. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 233A and Social Science 242E.

**253D Kinship, Households, and Gender (4).** Anthropological theories of kinship and social organization. Households as arenas for social reproduction and economic action. Gender theory in anthropology. The effects of colonization, migration, and economic development upon gender, family, and households. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 234A.

**253E Age, Generations, and the Life Course (4).** Age is a central organizing principle of individual lives, social institutions, and human populations. Considers how age is socially defined and how developmental transitions between ages (i.e., growing up and growing older) are accomplished.

**253F Populations (4).** Global history of population growth; how social, economic, political factors affect population processes of fertility, mortality, migration; the epidemiological transition; fertility declines in more and less developed nations; implications of demographic developments for women, children, and/or aged.

**253G Women and Development (4).** Explores questions about the dynamics of gender in processes of economic change, and the related problem of the production of knowledge about "women" and "development," with particular attention to Third World feminist critiques. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 241A.

#### **SOCIAL STRUCTURE, SOCIAL ORGANIZATIONS, AND SOCIAL NETWORKS**

**253H Gender, Family, and Community (4).** Analyzes theory and research on family and community relations from the perspective of gender. Feminist theories of family power relations, caring in family and community settings, women and men as caregivers in the family and workplace, grass-roots organizing for family and community issues.

**253I Political Sociology (4).** Begins with an examination of the three major orientations to the State (Pluralist, Elitist, and Class). Next considers current topics in political sociology including the Welfare State, the New Deal, political behavior, social movements, participation, and democracy.

**253J Social Movements (4).** A survey of the field of Social Movements, oriented around critical themes in the major theoretical traditions and contemporary exemplars.

**253N 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.

**253O Seminar in Social Structure (4).** Alternative theoretical approaches and research strategies for examining topics such as stratification, modernization, and socialization. Readings include Marx, Weber, Dahrendorf, Sahlins, and Lenski. Prerequisite: graduate standing or consent of instructor.

**253P Gender, Politics, and the State (4).** Explores complex historical, cultural, and social processes by which the state and politics are gendered. Topics include: feminist and post-colonialist theories of the state; development of the welfare state; and the diversity of women's political activism.

#### **THIRD WORLD DEVELOPMENT AND SOCIAL CHANGE**

**254A Urban Anthropology and International Migration (4).** Interdisciplinary, but favors anthropological perspectives to examine the nature of urban society, theoretical explanations for international migration, 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. Same as Anthropology 235A.

**254B 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. Same as Anthropology 236A.

**254C Anthropology of Power Relations (4).** Examines contemporary anthropological research on power relations in societies and cultures experiencing change as a result of increasing incorporation into a world capitalist system. Topics include: ethnicity, gender, migration, hegemony, and resistance. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 237A.

**254D Social Inequality: Anthropological Perspectives (4).** Comparative social inequality over the range of issues to which anthropologists have contributed. Topics include: egalitarian societies, local effects of international political economy, ethnicity, gender, caste, and inequality in peasant and urban industrial populations. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 238A.

**254E Economic Anthropology (4).** Classic and contemporary theory in economic anthropology. Case studies from Latin America (primarily Mexico and the Andes), Africa, and the Pacific. Substantive topics include non-market exchange, markets and marketplaces, households, gender, management of common property (fisheries, pastoral lands, forests), labor, development, and change. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 240A.

**254F The Politics of Ethnography (4).** Explores the way that ethnographies are linked to wider contexts within which they are produced. Through examination of recent critiques of ethnographic writing, and a series of cases, shows how ethnography is bound up with the politics of representation. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 242A.

**254G The Anthropology of Commodities (4).** Explores anthropological perspectives on commodities and commodity exchange. Begins with anthropological accounts of exchange in precapitalist societies, and moves on to explore: commodification and capitalism; consumer society and the semiotics of consumption; and the implications of contemporary transnational commodity flows. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 244A.

**254H Seminar in Political Anthropology (4).** Explores anthropological approaches to politics. Covers a range of issues and topics including: theories of culture, power, and hegemony; approaches to colonial and post-colonial relations of global inequality; and ethnographic approaches to the modern state. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 245A.

**254I Studies in the National Order of Things (4).** Examines how "the nation" has come to appear as an inevitable unit of the contemporary political and cultural order and how it shapes orders of knowledge. Themes: nation and gender; nationalism and colonialism; culture and citizenship; violence and racism. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 246A.

**254J Global Urbanization (4).** Examines the spread of cities worldwide in the twentieth century. What are the political and economic causes of this processes? What are the social-cultural, political, economic effects? How is contemporary urbanization linked to global restructuring of other kinds? Same as Urban and Regional Planning U273.

**254K Gender and Globalization (4).** Teases out gender implications of transformations in global culture and political economy. By examining processes such as globalization of production and investment, spread of religious fundamentalisms, and extension of mass media throughout the world, maps out terrain for future ethnographic and theoretical work. Same as Anthropology 234B.

#### **METHODS AND STATISTICS**

**255A-B Research Design I, II (4-4).** Data collection, organization, and analysis in ethnographic or quasi-experimental settings, including interviewing, participant-observation, behavior observation, and questionnaires. Research design issues include sampling, longitudinal research, and comparative research. Emphasis on the integration of qualitative and quantitative data. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 223A-B.

**255D Activist and Applied Research Methods (4).** Surveys ways of linking academic social science research with social change. Feminist, activist, participatory, applied, and mass-media-oriented research projects are analyzed and evaluated in terms of scientific standards and effectiveness in bringing about social change.

**255M-N Graduate Statistics I, II (4-4).** Statistics with emphasis on applications in sociology and anthropology. Examines exploratory uses of statistical tools in these fields as well as univariate, bivariate, and multivariate applications in the context of the general linear model. Prerequisites: graduate standing, consent of instructor. Same as Anthropology 210A-B.

#### **OTHER METHODOLOGY AND STATISTICS**

**256A 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. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 222A, and Social Science 201G and 241C.

**256D-E 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. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 224A-B.

**256G 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.

**256H-I-J Research Methodology I, II, III (4-4-4) F, W, S.** 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. Prerequisite: graduate standing. Same as Social Science 207A-B-C.

**256K Participatory and Feminist Research (4).** Methods of participatory research developed by feminists, Paulo Freire, and others. Non-hierarchical, focused on everyday experience, and action-oriented. Students do preliminary projects with community members; may focus on family and gender, racism and ethnicity, oppression in the workplace, or others. Prerequisite: graduate standing or consent of instructor.

**256L Analysis of Quantitative Field Data (4).** The uses of quantitative data by field anthropologists and sociologists, including found data (e.g., government censuses and archives), and data from interviews, field censuses, surveys, and systematic elicitation. Hands-on work with existing data. Very elementary statistics and basic computer literacy assumed. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 220A.

**256M Comparative and Historical Sociological Methods (4).** Topics include the logic of comparative and historical analysis techniques and the examination of exemplar works in representative problem areas.

#### SPECIAL TOPICS IN SOCIAL RELATIONS

**259A Special Topics in Social Relations (1 to 4).** Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

#### MULTICULTURAL/INTERNATIONAL

**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. Prerequisite: graduate standing or consent of instructor. Formerly Comparative Culture 210A.

**271A-B-C Colloquium: Dominant American Culture (4-4-4).** A three-quarter survey of the literature and interpretations of American institutions and lifeways—demography, population, and settlement patterns; family, education, and enculturation processes; law, politics, economics, and religion, science and technology; mass media and the popular arts. Required of all Comparative Culture graduate students. Prerequisite: graduate standing or consent of instructor. Formerly Comparative Culture 240A-B-C.

**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. Prerequisite: graduate standing or consent of instructor. Formerly Comparative Culture 200A.

**274A-B Colloquium: African-American Culture I, II (4-4).** A two-quarter sequence which explores issues in African-American history and cultures, chiefly through the reading and discussion of major works dealing with those issues. Prerequisite: graduate standing or consent of instructor. Formerly Comparative Culture 241A-B.

**274C-D Colloquium: Asian-American Culture I, II (4-4).** Examines the experiences of Asians in the United States, primarily the Chinese, Japanese, Koreans, Asian Indians, Filipinos, and Vietnamese. Examines diversity among the various Asian groups within each ethnic group, and contrasts the Asian-American experience with other nonwhite minorities. Required of all Comparative Culture graduate students. Prerequisite: graduate standing or consent of instructor. Formerly Comparative Culture 244A-B.

**274E-F Colloquium: Hispanic-American Culture I, II (4-4).** The history and cultural background of contemporary Americans of Latin-American descent. Introduces students to major works in history, social sciences, and the arts that are essential for understanding this aspect of the U.S. socio-historical development. Prerequisite: graduate standing or consent of instructor. Formerly Comparative Culture 243A-B.

**274G-H Colloquium: Native American Culture I, II (4-4).** Historical and social science research literature on Native American cultures—predominantly Indian but also Aleut and Eskimo. Migration, historical position within the political economy; major legislation that pertains to Native Americans, race relations, demography, population movements, family, politics, religion, ceremonialism. Required of all Comparative Culture graduate students. Prerequisite: graduate standing or consent of instructor. Formerly Comparative Culture 242A-B.

**275 A-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. Formerly Comparative Culture 220A-B-C.

**276A-B-C Seminar in Expressive Forms of American Culture I, II, III (4-4-4).** Interpretations of expressive forms produced by U.S. cultural groups, together with significant examples of those expressive forms. Includes literature, visual arts, folklife and popular culture, myth and ritual. **276A:** Focuses on expressive forms of dominant American culture. **276B-C:** Deals with African-American, Asian-American, Hispanic-American, and Native American cultures. Prerequisite: graduate standing or consent of instructor. Formerly Comparative Culture 230A-B-C.

#### SPECIAL COURSES IN SOCIAL SCIENCES

**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 toward 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.

# COLLEGE OF MEDICINE

Thomas C. Cesario, M.D., **Dean**

Irvine Hall

Admissions: (714) 824-5388

World Wide Web: <http://www.com.uci.edu/>

## Faculty

David Abrahamson, M.B., Ch.B. University of Witwatersrand (South Africa),  
*Assistant Clinical Professor of Medicine*

Bruce M. Achauer, M.D. Baylor College of Medicine, *Adjunct Professor of Surgery (Plastic)*

Behnoosh Afghani, M.D. University of Southern California, *Assistant Clinical Professor of Pediatrics*

Phyllis F. Agran, M.D. University of California, Irvine, M.P.H. Harvard University, *Professor of Pediatrics and Social Ecology*

Thomas Ahlering, M.D. Saint Louis University, *Associate Professor of Surgery (Urology)*

Gurpreet Ahuja, M.D. India Institute of Medical Science, *Assistant Clinical Professor of Otolaryngology*

Abdelmadjid Aissi, Ph.D. Georgia Institute of Technology, *Associate Clinical Professor of Radiation Oncology*

Marcia Alcoumre, M.D. University of Oklahoma, *Assistant Clinical Professor of Medicine*

Michael Alkire, M.D. University of California, Los Angeles, *Assistant Clinical Professor of Anesthesiology*

Nancy Allbritton, Ph.D. Massachusetts Institute of Technology, M.D. The Johns Hopkins University School of Medicine, *Assistant Professor of Physiology and Biological Sciences*

Byron J. Allen, M.D. University of California, Los Angeles, *Associate Clinical Professor of Medicine (Cardiology)*

Glenn R. Allison, M.D. St. Louis University, *Associate Clinical Professor of Otolaryngology*

Amer Al-Zarka, M.D. Jordan University Medical School, *Assistant Professor of Medicine (Cardiology) in Residence*

Navinchandra M. Amin, M.B., B.S. Grant Medical Center, Bombay (India), *Adjunct Professor of Family Medicine*

Mario Ammirati, M.D. University of Naples (Italy), *Associate Professor of Medicine*

Anne-Line J. Anderson, M.S. University of Southern California, *Clinical Professor of Radiological Sciences*

Cynthia T. Anderson, M.D. University of Tennessee, *Department Chair (Acting) and Associate Clinical Professor of Anesthesiology*

Brian S. Andrews, M.B., B.S. University of Sydney (Australia), *Chief of Rheumatology and Clinical Immunology and Professor of Medicine (Rheumatology)*

Arde K. Anoshivani, M.D. Tehran University, *Associate Clinical Professor of Psychiatry and Human Behavior*

Hoda Anton-Culver, Ph.D. St. Andrews University (Scotland), *Professor of Medicine (Epidemiology and Preventive Medicine) and Social Ecology*

Stuart M. Arfin, Ph.D. Albert Einstein College of Medicine, *Chair of the Department of Biological Chemistry (Acting) and Professor of Biological Chemistry and Biological Sciences*

Steven A. Armentrout, M.D. University of Chicago, *Professor Emeritus of Medicine (Hematology)*

William B. Armstrong, M.D. University of Washington, *Assistant Adjunct Professor of Otolaryngology*

Edward R. Arquilla, M.D., Ph.D. Case Western Reserve University School of Medicine, *Professor Emeritus of Pathology*

Paul G. Arshagouni, M.D. University of California, Irvine, *Assistant Clinical Professor of Pediatrics*

Ricardo H. Asch, M.D. University of Buenos Aires (Argentina), *Professor of Obstetrics and Gynecology (Reproductive Endocrinology and Infertility)*

Rajkumari V. Asrani, M.B., B.S. Madras Medical College (India), *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 of Medicine and Pharmacology (Oncology) in Residence*

Vera Jo Bahry, M.S.N. Case Western Reserve University, *Assistant Clinical Professor of Obstetrics and Gynecology*

Dean Bradford Baker, M.D. University of California, Berkeley, *Director of the UCI Center for Occupational and Environmental Health and Professor of Clinical Medicine and Social Ecology*

Kenneth M. Baldwin, Ph.D. University of Iowa, *Professor of Physiology and Biophysics, Biological Sciences, and Community and Environmental Medicine*

Tallie Z. Baram, M.D. University of Miami, Ph.D. Weizmann Institute of Science (Israel), *Professor of Pediatrics, Neurology, and Anatomy and Neurobiology, and Danette Shepard Chair in Neurological Science*

Michael E. Barish, Ph.D. Stanford University, *Associate Adjunct Professor of Physiology and Biophysics*

Steven J. Barker, M.D. University of Miami, Ph.D. California Institute of Technology, *Professor Emeritus of Anesthesiology*

Ronald J. Barr, M.D. Johns Hopkins Medical School, *Professor of Dermatology and Pathology*

Cyril H. Barton, M.D. University of Colorado Medical School, *Associate Professor of Medicine (Nephrology-Renal)*

Stanley Bassin, Ed.D. University of California, Berkeley, *Clinical Professor of Medicine (Cardiology)*

Kate M. Bell, M.D. George Washington University, *Assistant Professor of Psychiatry and Human Behavior in Residence*

Rimal B. Bera, M.D. University of California, Irvine, *Associate Clinical Professor of Psychiatry*

J. Edward Berk, M.D. Jefferson Medical College, D.Sc. University of Pennsylvania, *College of Medicine Distinguished Professor Emeritus of Medicine (Gastroenterology)*

Michael L. Berman, M.D. George Washington School of Medicine, *Professor of Obstetrics and Gynecology (Oncology), and Community and Environmental Medicine*

Monique A. Berman, Ph.D. State University of New York Upstate Medical Center, *Associate Adjunct Professor of Medicine (Rheumatology)*

Michael W. Berns, Ph.D. Cornell University, *Professor of Surgery, Cell Biology, Ophthalmology, Radiology, and Management, and Arnold and Mabel Beckman Chair in Laser Biomedicine*

Clifford Bernstein, M.D. Rutgers Medical School, *Assistant Clinical Professor of Anesthesiology*

Richard B. Berry, M.D. University of Florida, *Associate Professor of Medicine (Pulmonary) in Residence*

Deepak K. Bhalla, Ph.D. Howard University, *Associate Professor of Community and Environmental Medicine in Residence*

Robert H. Blanks, Ph.D. University of California, Los Angeles, *Professor of Anatomy and Neurobiology, Otolaryngology, and Biological Sciences*

Andre Blaylock, M.D. Loma Linda University, *Assistant Clinical Professor of Family Medicine*

Floyd E. Bloom, M.D. Washington University School of Medicine, *Adjunct Professor of Psychiatry and Human Behavior, and Pharmacology*

Maureen E. Bocian, M.D. University of Illinois, *Associate Professor of Clinical Pediatrics, and Obstetrics and Gynecology*

Stephen C. Bondy, Ph.D. University of Birmingham (England), *Professor of Community and Environmental Medicine, and Pharmacology*

Warren L. Bostick, M.D. University of California, San Francisco, *Professor Emeritus of Pathology*

William G. Bradley, M.D. University of California, San Francisco, Ph.D. Princeton University, *Professor of Radiology in Residence*

Ralph Bradshaw, Ph.D. Duke University, *Professor of Biological Chemistry and of Biological Sciences*

Karna Bramble, Ph.D. University of Southern California, M.S.N. California State University, Long Beach, *Associate Clinical Professor of Medicine (Geriatrics)*

Philip Braunstein, M.B., B.S. King's College (England), *Professor Emeritus of Radiological Sciences*

Peter Breen, M.D. University of Manitoba, *Assistant Professor of Anesthesiology in Residence*

Matthew Brenner, M.D. University of California, San Diego, *Associate Professor of Medicine (Pulmonary)*

Michael A. Brodsky, M.D. University of Illinois, *Associate Professor of Medicine in Residence (Cardiology)*

Marianne Bronner-Fraser, Ph.D. The Johns Hopkins University, *Professor of Biological Sciences and of Physiology and Biophysics*

- Steven Brostoff, Ph.D. Massachusetts Institute of Technology, *Adjunct Professor of Neurology*
- P. Kaye Brundidge, M.D. University of Washington, *Assistant Clinical Professor of Anesthesiology*
- Kristina Bry, M.D. University of Helsinki, *Associate Adjunct Professor of Pediatrics (Neonatology)*
- Monte S. Buchsbaum, M.D. University of California, San Francisco, *Professor Emeritus of Psychiatry and Human Behavior*
- Blynn Bunney, Ph.D. University of California, Irvine, *Assistant Clinical Professor of Psychiatry*
- William E. Bunney, Jr., M.D. University of Pennsylvania, *UCI Distinguished Professor of Psychiatry and Human Behavior, Professor of Pharmacology and Psychobiology, and Della Martin Chair of Psychiatry*
- Michael J. Burns, M.D. University of California, Irvine, *Clinical Professor of Medicine (Emergency Medicine)*
- John A. Butler, M.D. Loyola Stritch School of Medicine, *Associate Professor of Surgery*
- Michael D. Cahalan, Ph.D. University of Washington, *Department Chair and Professor of Physiology and Biophysics and Professor of Biological Sciences*
- Vincent J. Caiozzo, Ph.D. University of California, Irvine, *Assistant Adjunct Professor of Orthopedic Surgery*
- Justin D. Call, M.D. University of Utah College of Medicine, *Professor Emeritus of Psychiatry and Human Behavior*
- Anne L. Calof, Ph.D. University of California, San Francisco, *Assistant Professor of Anatomy and Neurobiology and of Biological Sciences*
- Philip M. Carpenter, M.D. Southwestern Medical School, *Assistant Professor of Pathology in Residence*
- Linda R. Casey, M.D. Emory University, *Assistant Clinical Professor of Radiology*
- Denise L. Cassidenti, M.D. University of Southern California, *Assistant Professor of Obstetrics and Gynecology in Residence*
- 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, *Dean of the College of Medicine and Professor of Medicine (Infectious Disease)*
- Barry F. Chaitin, M.D. New York University, *Clinical Professor of Psychiatry*
- David A. Chamberlin, M.D. University of California, Irvine, *Assistant Clinical Professor of Surgery*
- K. George Chandy, Ph.D. University of Birmingham (England), M.B., B.S. Christian Medical College, Vellore (India), *Professor of Physiology and Biophysics, Microbiology and Molecular Genetics, and Biological Sciences*
- Kenneth J. Chang, M.D. Brown University, *Assistant Professor of Medicine (Gastroenterology) in Residence*
- M. Arthur Charles, M.D. University of California, Irvine, Ph.D. University of California, San Francisco, *Professor of Medicine (Endocrinology)*
- John Chen, M.D. Temple University, *Assistant Clinical Professor of Surgery (Cardiothoracic)*
- Kota Chetty, M.B., B.S. Guntur Medical College (India), *Associate Adjunct Professor of Medicine (Pulmonary)*
- Aleksandra Chicz-Demet, Ph.D. Illinois Institute of Technology, *Assistant Adjunct Professor of Psychiatry*
- Robert R. Chilcote, M.D. University of Rochester, *Professor Emeritus of Pediatrics in Residence*
- Zang-Hee Cho, Ph.D. Uppsala University (Sweden), *Professor of Radiological Sciences, Ophthalmology, and Psychiatry and Human Behavior*
- Byung H. (Ben) Choi, M.D. Severance Union Medical College, Ph.D. Yonsei University (Korea), *Professor of Pathology, and Community and Environmental Medicine*
- Ho Joon Choi, M.D. Seoul National University (Korea), *Associate Clinical Professor of Anesthesiology, and Obstetrics and Gynecology*
- Allen J. Cohen, M.D. University of Miami School of Medicine, Ph.D. Massachusetts Institute of Technology, *Adjunct Professor of Radiology Sciences*
- Michael Cohen, Ph.D. Bowling Green State University, *Adjunct Professor of Psychiatry and Neurology*
- Gary W. Cole, M.D. University of California, Los Angeles, *Adjunct Professor of Dermatology*
- John C. Collins, M.D. University of California, San Francisco, *Assistant Professor of Surgery in Residence*
- Martin Colman, M.B., Ch.B., M.M.Ed. (Rad. T.), D.M.R.T. University of Witwatersrand (South Africa), *Acting Chair of Radiation Oncology and Associate Professor of Radiation Oncology, and Obstetrics and Gynecology*
- J. Pierce Conaty, M.D. University of Southern California, *Clinical Professor of Orthopedic Surgery*
- Ross Conner, Ph.D. Northwestern University, *Associate Professor of Social Ecology and Medicine*
- John E. Connolly, M.D. Harvard Medical School, *Professor of Surgery (General/Thoracic)*
- Eugene Coodley, M.D. University of California, San Francisco, *Professor of Medicine in Residence (Geriatrics)*
- Evangelos Coskinas, M.D., Ph.D. University of South Florida, *Assistant Clinical Professor of Psychiatry and Human Behavior*
- Mary A. Cote, M.D. Loma Linda University, *Assistant Clinical Professor of Ophthalmology and Pathology*
- Carl W. Cotman, Ph.D. Indiana University, *Professor of Neurology, Biological Sciences, and Psychiatry and Human Behavior*
- David Cribbs, Ph.D. West Virginia University, *Assistant Adjunct Professor of Neurology*
- Francis M. Crinella, Ph.D. Louisiana State University, *Clinical Professor of Physical Medicine and Rehabilitation, Psychiatry and Human Behavior, and Pediatrics*
- T. Timothy Crocker, M.D. University of California, San Francisco, *Professor Emeritus of Community and Environmental Medicine*
- Roger L. Crumley, M.D. University of Iowa, *Department Chair and Professor of Otolaryngology (Head and Neck Surgery)*
- Floyd L. Culler, M.D. University of Tennessee, *Associate Adjunct Professor of Pediatrics*
- Dennis D. Cunningham, Ph.D. University of Chicago, *Department Chair and Professor of Microbiology and Molecular Genetics and Professor of Biological Sciences and Biological Chemistry*
- Ralph W. Cygan, M.D. State University of New York Downstate Medical Center, *Clinical Professor of Medicine (General Internal Medicine and Primary Care)*
- Dvora Cyrlik, M.D. Yale University, *Clinical Professor of Radiological Sciences*
- Edward R. Dana, M.D. The Johns Hopkins University School of Medicine, *Clinical Professor of Radiological Sciences*
- Vicki C. Darrow, M.D. University of Washington, *Assistant Professor of Clinical Obstetrics and Gynecology*
- Suanne M. Daves, M.D. University of Oklahoma, *Associate Clinical Professor of Anesthesiology*
- Earle A. Davis, Ph.D. University of Illinois, *Senior Lecturer Emeritus of Anatomy and Physical Medicine and Rehabilitation*
- Mary L. Day, M.S.N. Vanderbilt University, *Assistant Clinical Professor of Obstetrics and Gynecology*
- Lyle C. Dearden, Ph.D. University of Utah, *Professor Emeritus of Anatomy and Neurobiology, Community and Environmental Medicine, and Radiological Sciences*
- Luis M. de la Maza, M.D. Facultad de Medicina (Spain), Ph.D. University of Minnesota, *Professor of Pathology*
- Ralph Delfino, M.D. University of Chicago, *Assistant Clinical Professor of Medicine and Social Ecology*
- Edward M. DeMet, Ph.D. Illinois Institute of Technology, *Professor of Psychiatry and Human Behavior in Residence*
- Carolyn F. Dennehey, M.D. University of California, Irvine, *Assistant Clinical Professor of Medicine*
- Larry-Stuart Deutsch, M.D. McGill University, *Clinical Professor of Radiological Sciences and Medicine*
- Rosalind B. Dietrich, M.D. University of Manchester, *Department Chair (Acting) and Professor of Radiological Sciences*
- Truc V. Dinh, M.D. University of Saigon (Vietnam), *Associate Clinical Professor of Family Medicine*
- Philip J. DiSaia, M.D. Tufts University School of Medicine, *Chief of Gynecology and Gynecologic Oncology, Professor of Obstetrics and Gynecology and of Radiological Sciences, and Dorothy J. Marsh Chair in Reproductive Biology*
- Michael Dogali, M.D. McGill University Medical School, *Department Chair and Clinical Professor of Neurosurgery*
- Kaaren C. Douglas, M.D. University of Missouri, *Associate Clinical Professor of Family Medicine*
- Karen Jo Doyle, M.D. University of California, San Francisco, Ph.D. University of California, Santa Barbara, *Assistant Professor of Otolaryngology (Head and Neck Surgery) in Residence*
- Sue Piper Duckles, Ph.D. University of California, San Francisco, *Professor of Pharmacology and Associate Dean for Faculty Development*
- Kenneth W. Dumars, M.D. University of Colorado, School of Medicine, *Professor Emeritus of Pediatrics*

- Theodore Durbin, M.D. University of California, Irvine, *Assistant Professor of Medicine (Gastroenterology) in Residence*
- Dorcas M. Eaves, M.D. Boston University, *Director, UCI Student Health Services and Assistant Clinical Professor of Surgery*
- Emily A. Ebert, M.D. University of Arizona, M.P.H. University of Texas, *Assistant Clinical Professor of Family Medicine*
- Ramin Ebrahimi, M.D. George Washington University, *Assistant Clinical Professor of Medicine (Cardiology)*
- Frederick J. Ehlert, Ph.D. University of California, Irvine, *Associate Professor of Pharmacology*
- Alan N. Elias, M.B., B.S. University of Calcutta (India), *Professor of Medicine (Endocrinology)*
- Jane Emerson, M.D. University of Virginia, Ph.D. Brown University, *Assistant Professor of Pediatrics, Pathology, and Radiological Sciences*
- James T. Evans, M.D. University of California, San Diego, *Assistant Clinical Professor of Family Medicine*
- Mark R. Ezekiel, M.D. Meharry Medical School, *Assistant Clinical Professor of Anesthesiology*
- Leslie H. Fall, M.D. Dartmouth College, *Assistant Clinical Professor of Pediatrics*
- James H. Fallon, Ph.D. University of Illinois, *Professor of Anatomy and Neurobiology, and Biological Sciences*
- Pauline Filippek, M.D. Georgetown University, *Assistant Professor of Pediatrics in Residence*
- Camille Fitzpatrick, M.S.N. California State University, Long Beach, *Assistant Clinical Professor of Family Medicine*
- Eldon L. Foltz, M.D. University of Michigan, Medical School, *Professor Emeritus of Neurological Surgery*
- Michael Forino, M.D. State University of New York–Downstate, *Assistant Clinical Professor of Radiological Sciences*
- Donald N. Forthal, M.D. University of California, Irvine, *Assistant Professor of Medicine (Infectious Diseases) in Residence*
- Peter A. Fotinakes, M.D. University of California, Irvine, *Assistant Clinical Professor of Neurology*
- Gail C. Frank, Ph.D. Tulane University, *Adjunct Professor of Pediatrics*
- Harrison Frank, M.D. Northwestern University, Ph.D. University of Southern California, *Associate Professor of Medicine (Diabetes) in Residence*
- Robert Freel, Ph.D. University of California, Los Angeles, *Associate Clinical Professor of Medicine (Nephrology-Renal)*
- Roger K. Freeman, M.D. University of California, San Francisco, *Professor of Obstetrics and Gynecology in Residence (Maternal-Fetal Medicine)*
- Richard M. Friedenber, M.D. State University of New York, *Professor Emeritus of Radiological Sciences*
- George J. Friou, M.D. Cornell University Medical College, *Professor Emeritus of Medicine (Rheumatology)*
- Sharon E. Fujikawa-Brooks, Ph.D. University of Washington, *Associate Clinical Professor of Neurology and Pediatrics*
- David W. Furnas, M.D. University of California, Berkeley, San Francisco Medical Center, *Chief of Plastic Surgery and Clinical Professor of Surgery (Plastic)*
- Stanley Galant, M.D. University of California, San Francisco, *Clinical Professor of Pediatrics (Allergy)*
- Christine M. Gall, Ph.D. University of California, Irvine, *Professor of Anatomy and Neurobiology and of Biological Sciences*
- Kathleen Gallagher, M.D. University of California, Irvine, *Assistant Clinical Professor of Family Medicine*
- Julius M. Gardin, M.D. University of Michigan, *Chief of Cardiology and Professor of Medicine (Cardiology)*
- John Jay Gargus, M.D., Ph.D. Yale University, *Associate Professor of Physiology and Biophysics and of Pediatrics*
- Thomas J. Garite, M.D. University of California, Irvine, *Department Chair, and Professor of Obstetrics and Gynecology (Maternal-Fetal Medicine)*
- Ronald N. Gaster, M.D. University of California, Los Angeles, *Adjunct Professor of Ophthalmology*
- Alan B. Gazzaniga, M.D. Harvard Medical School, *Professor of Surgery (Thoracic)*
- Constantine Gean, M.D. University of Santo Tomas (Phillipines), *Assistant Clinical Professor of Medicine*
- Kelvin Gee, Ph.D. University of California, Davis, *Associate Professor of Pharmacology*
- Mark F. Giglio, M.D. University of Virginia, *Assistant Clinical Professor of Family Medicine*
- Roland A. Giolli, Ph.D. University of California, Berkeley, *Professor of Anatomy and Neurobiology, and Biological Sciences*
- Gordon G. Globus, M.D. Tufts University School of Medicine, *Professor Emeritus of Psychiatry and Human Behavior*
- Louis Gluck, M.D. University of Chicago, *Professor of Pediatrics, and Obstetrics and Gynecology*
- Alan Goldin, M.D., Ph.D. University of Michigan, *Associate Professor of Microbiology and Molecular Genetics, Physiology and Biophysics, and Biological Sciences*
- Sastry Gollapudi, Ph.D. Dalhousie University (Nova Scotia, Canada), *Associate Adjunct Professor of Medicine (Geriatrics)*
- Judith Golub, Ph.D. University of California, Los Angeles, *Assistant Clinical Professor of Pediatrics*
- Sidney H. Golub, Ph.D. Temple University, *Executive Vice Chancellor and Professor of Microbiology and Molecular Genetics, Molecular Biology and Biochemistry, and Surgery*
- Fernando Gomez-Pinella, Ph.D. University of California, Los Angeles, *Assistant Adjunct Professor of Neurology*
- Ian L. Gordon, M.D., Ph.D. University of Southern California, *Assistant Professor of Surgery in Residence*
- Louis A. Gottschalk, M.D. Washington University School of Medicine, *Professor Emeritus of Psychiatry and Human Behavior*
- James Graham, M.D. Medical College of Alabama, *Professor Emeritus of Medicine*
- Thomas Grayden, M.D. University of Minnesota, *Associate Clinical Professor of Psychiatry and Human Behavior*
- Clarence S. Greene, M.D. Howard University, *Associate Clinical Professor of Neurosurgery and Pediatric Neurology*
- Fred S. Greensite, M.D. University of California, San Diego, *Associate Professor of Radiology*
- Nancy C. Greep, M.D. Albert Einstein College of Medicine, *Associate Clinical Professor of Medicine (General Internal Medicine and Primary Care)*
- Christopher L. Greer, Ph.D. University of California, Berkeley, *Associate Professor of Biological Chemistry and Biological Sciences*
- Geeta K. Gupta, M.D. Harvard University, *Assistant Clinical Professor of Medicine*
- Sudhir Gupta, M.B., B.S., Ph.D. King George's Medical College, Lucknow University (India), *Chief of Basic and Clinical Immunology and Professor of Medicine (Basic and Clinical Immunology), Pathology, Microbiology and Molecular Genetics, and Neurology*
- George A. Gutman, Ph.D. Stanford University, *Professor of Physiology and Biophysics, Microbiology and Molecular Genetics, and Biological Sciences*
- Grant Gwinup, M.D. University of Colorado, School of Medicine, *Professor Emeritus of Medicine (Endocrinology)*
- James Michael Hagar, M.D. University of Southern California, *Assistant Professor of Medicine (Cardiology) in Residence*
- Rhoda Hahn, M.D. University of Nebraska, *Associate Clinical Professor of Psychiatry and Human Behavior*
- Richard J. Haier, Ph.D. The Johns Hopkins University, *Professor of Pediatrics in Residence*
- Harry T. Haigler, Ph.D. Vanderbilt University, *Professor of Physiology and Biophysics, Biological Sciences, and Biological Chemistry*
- James E. Hall, Ph.D. University of California, Riverside, *Professor of Physiology and Biophysics, and Biological Sciences*
- Mikko N. Hallman, M.D. University of Helsinki, *Professor of Pediatrics (Neonatology)*
- Michael M. Hart, M.D. George Washington University, *Associate Clinical Professor of Medicine*
- Marguerite Hatch, Ph.D. Trinity College (Dublin), *Associate Adjunct Professor of Medicine (Nephrology-Renal)*
- G. Wesley Hatfield, Ph.D. Purdue University, *Professor of Microbiology and Molecular Genetics, and Biological Sciences*
- Richard H. Helfant, M.D. New York University, *Clinical Professor of Medicine*
- Daiga Helmeste, Ph.D. University of Toronto, *Assistant Adjunct Professor of Psychiatry*
- Walter L. Henry, M.D. Stanford University School of Medicine, *Professor of Medicine (Cardiology)*
- Carl A. Hess, M.D. Medical College of Wisconsin, *Associate Clinical Professor of Anesthesiology*
- Richard A. Hill, M.D. Northwestern University, *Assistant Professor of Ophthalmology*

- John Hiserodt, M.D. University of California, Los Angeles, Ph.D. University of California, Irvine, *Assistant Professor of Pathology*
- Winston Ho, M.D. Haddassah University (Israel), *Clinical Professor of Medicine (Hematology)*
- Robert Hodges, M.D. University of Iowa, *Professor Emeritus of Family Medicine*
- John C. Hoefs, M.D. George Washington University, *Associate Professor of Medicine (Gastroenterology)*
- M. Mark Hoffer, M.D. University of Chicago School of Medicine, *Professor Emeritus of Orthopedic Surgery and Pediatrics*
- Chang-Zern Hong, M.D. National Taiwan University, *Associate Professor of Physical Medicine and Rehabilitation*
- F. Allan Hubbell, M.D., M.S.P.H. Baylor University College of Medicine, *Chief (Acting) of Primary Care and Associate Professor of Medicine (General Internal Medicine and Primary Care) and Associate Professor of Social Ecology*
- Lynn E. Hunt, M.D. University of California, Los Angeles, *Associate Clinical Professor of Pediatrics*
- Valerie Hunter, M.D. University of Texas, *Associate Clinical Professor of Radiology*
- Robert F. Huxtable, M.D. University of Southern California, *Professor Emeritus of Pediatrics*
- Kenneth H. Ibsen, Ph.D. University of California, Los Angeles, *Professor Emeritus of Biological Chemistry*
- Kevin Ivey, M.B. B.S. University of Queensland (Australia), *Professor of Medicine in Residence (Gastroenterology)*
- John W. Jacobs, Ph.D. Washington University, *Adjunct Professor of Biological Chemistry*
- James G. Jakowatz, M.D. University of Kansas, *Associate Professor of Surgery in Residence (General)*
- Mehrdad Jalili, M.D. University of Isfahan (Iran), *Assistant Clinical Professor of Pediatrics*
- Edward W. Jeffes, III, M.D. University of California, Los Angeles, Ph.D. University of California, Irvine, *Associate Professor of Dermatology in Residence*
- Janine Jensen, M.D. George Washington University, *Assistant Adjunct Professor of Obstetrics and Gynecology*
- Jerald Lee Jensen, D.D.S. Marquette University, *Associate Clinical Professor of Pathology*
- Yi Jin, M.D. Shanghai University (China), *Assistant Adjunct Professor of Psychiatry*
- Jennifer Johnson, M.D. University of Muenster (Germany), *Associate Professor of Clinical Pediatrics*
- Edward G. Jones, M.D. University of Otago (New Zealand); Ph.D. University of Oxford (England), *Professor of Anatomy and Neurobiology and of Developmental and Cell Biology*
- Joie P. Jones, Ph.D. Brown University, *Professor of Radiological Sciences*
- Malcolm D. Jones, M.D. University of California, San Francisco, *Professor Emeritus of Radiological Sciences*
- Glenn H. Kageyama, Ph.D. University of California, San Francisco, *Assistant Adjunct Professor of Anatomy and Neurobiology, and Biological Sciences*
- Amir Kalali, M.B.B.S. University College, *Assistant Clinical Professor of Psychiatry*
- Vaijina Kamanna, Ph.D. University of Mysore (India), *Assistant Adjunct Professor of Medicine (Nephrology)*
- Linda R. Kaplan, M.D. Rush University, *Assistant Clinical Professor of Neurology*
- Moti L. Kashyap, M.B., B.S. King Edward VII College (Singapore), *Professor of Medicine and Geriatrics in Residence (Internal Medicine)*
- David Katz, M.D. Case Western Reserve University School of Medicine, *Clinical Professor Emeritus of Radiological Sciences*
- Jacob Katz, M.B., Ch.B. University of Witwatersrand (South Africa), *Professor of Pediatrics and Pathology*
- Charles J. Kaupke, M.D. University of California, Los Angeles, *Associate Adjunct Professor of Medicine (Nephrology/Renal)*
- Amin Kazzi, M.D. University of California, Los Angeles, *Assistant Clinical Professor of Medicine*
- Richard H. Keates, M.D. Jefferson Medical Center, *Department Chair and Professor of Ophthalmology, and Irving H. Leopold Chair in Ophthalmology*
- Kirk A. Keegan, Jr., M.D. University of Maryland, *Assistant Dean, College of Medicine, and Associate Professor of Obstetrics and Gynecology (Maternal-Fetal Medicine), and Pediatrics*
- Timothy F. Kelley, M.D. Bowman Gray College, *Assistant Clinical Professor of Otolaryngology*
- J. Patrick Kesslak, Ph.D. Texas Christian University, *Assistant Adjunct Professor of Neurology*
- David Kidney, M.D., M.B., B.Ch. University of Cork (Ireland), *Assistant Clinical Professor of Radiological Sciences*
- Yutaka Kikkawa, M.D. University of Tokyo (Japan), *Department Chair and Professor of Pathology*
- Herbert P. Killackey, Ph.D. Duke University, *Chair of the Department of Psychobiology and Professor of Biological Sciences and of Anatomy and Neurobiology*
- Ronald C. Kim, M.D. Jefferson Medical College, *Associate Professor of Pathology in Residence*
- Michael A. Kirschenbaum, M.D. State University of New York, *Professor of Medicine (Renal Diseases) in Residence*
- Leonard M. Kitzes, Ph.D. University of California, Irvine, *Professor of Anatomy and Neurobiology, Biological Sciences, and Otolaryngology*
- Michael T. Kleinman, Ph.D. New York University, *Adjunct Professor of Community and Environmental Medicine*
- Mary Knudtson, M.S.N. California State University Long Beach, *Assistant Clinical Professor of Family Medicine*
- Mark Kobayashi, M.D. Tulane University, *Assistant Professor of Surgery in Residence*
- Matthew Kohler, M.D. Duke University, *Assistant Professor of Obstetrics and Gynecology*
- Murray Korc, M.D. Albany College of Medicine, *Chief of Endocrinology and Professor of Medicine and Biological Chemistry*
- Richard Kozak, M.D. University of California, Irvine, *Assistant Clinical Professor of Medicine*
- Alan P. Kratz, M.D. University of Southern California, *Assistant Clinical Professor of Ophthalmology*
- Diana N. Krause, Ph.D. University of California, Los Angeles, *Adjunct Professor of Pharmacology*
- Mark E. Krugman, M.D. University of Maryland, *Associate Adjunct Professor of Otolaryngology*
- Julie Miye Kuniyoshi, M.D. University of Hawaii, *Assistant Clinical Professor of Medicine (Primary Care)*
- Jeffrey V. Kuo, M.D. Jefferson Medical College, *Assistant Clinical Professor of Radiation Oncology*
- Baruch D. Kuppermann, M.D. University of Miami, Ph.D. California Institute of Technology, *Assistant Professor of Ophthalmology in Residence*
- David C. Lagrew, M.D. University of Kentucky, *Associate Adjunct Professor of Obstetrics and Gynecology (Maternal-Fetal Medicine)*
- Mark I. Langdorf, M.D. University of California, San Diego, *Associate Adjunct Professor of Medicine (Emergency Medicine)*
- Janos K. Lanyi, Ph.D. Harvard University, *Professor of Physiology and Biophysics, Microbiology and Molecular Genetics, and Biological Sciences*
- Kathryn M. Larsen, M.D. University of Washington, *Associate Clinical Professor of Family Medicine*
- Pamela Ann Lawrence, M.D. Columbia University, *Clinical Professor of Medicine (Internal Medicine and Primary Care)*
- Huan D. Le, M.D. University of California, Los Angeles, *Associate Clinical Professor of Medicine (General Internal Medicine and Primary Care)*
- Paul T. Le, M.D. Case Western Reserve University, *Assistant Clinical Professor of Anesthesiology*
- Heung Lee, Ph.D. University of California, Irvine, *Assistant Adjunct Professor of Radiological Sciences*
- Yee-Lean Lee, Ph.D. University of California, Irvine, M.P.H. Yale University, *Assistant Adjunct Professor of Medicine*
- Patricia Lenahan, M.S.W. University of Chicago, *Assistant Clinical Professor of Family Medicine and Psychiatry*
- Marc A. Lerner, M.D. Mount Sinai School of Medicine, *Associate Clinical Professor of Pediatrics*
- Frances M. Leslie, Ph.D. Aberdeen University (Scotland), *Associate Vice Chancellor for Research and Professor of Pharmacology*
- Cyril Leung, M.D. Duke University, *Assistant Clinical Professor of Medicine (Cardiology)*
- Ellis Levin, M.D. Jefferson Medical College, *Professor of Medicine (Endocrinology) in Residence*
- Desiree A. Lie, M.D. Oxford University, *Assistant Clinical Professor of Family Medicine*
- Richard W. Light, M.D. The Johns Hopkins University School of Medicine, *Professor of Medicine (Pulmonary) in Residence*
- David L. Lilien, M.D. University of Southern California, *Associate Clinical Professor of Radiology and Nuclear Medicine*
- Fritz Lin, M.D. Medical College of Virginia, *Professor of Clinical Pathology*



- James C. Lindberg, M.D. University of California, Irvine, *Assistant Clinical Professor of Pediatrics*
- W. Ian Lipkin, M.D. Rush Medical College, *Associate Professor of Neurology, Anatomy, and Microbiology and Molecular Genetics*
- Amy Liu, Ph.D. McGill University (Canada), *Assistant Adjunct Professor of Neurology*
- Hoaping Liu, Ph.D. Cornell University, *Assistant Professor of Biological Chemistry and Biological Sciences*
- Kenneth J. Longmuir, Ph.D. University of Oregon, *Associate Professor of Physiology and Biophysics, and Biological Sciences*
- Ira T. Lott, M.D. The Ohio State University, *Chair of Pediatrics and Professor of Pediatrics and Neurology*
- Sandra Loughlin-Burkhead, Ph.D. University of California, San Diego, *Assistant Adjunct Professor of Anatomy and Neurobiology, Pharmacology, and Neurology*
- Nelson Lowe, D.D.S. University of Southern California, *Assistant Clinical Professor of Otolaryngology*
- Frederic C. Ludwig, M.D. Tübingen (Germany), D.Sc. Sorbonne (France), *Professor Emeritus of Pathology*
- Kenneth P. Lyons, M.D. Creighton University School of Medicine, *Professor of Radiological Sciences and Nuclear Medicine in Residence*
- Thomas Y. Ma, M.D., Ph.D. Medical College of Virginia, *Assistant Professor of Medicine (Gastroenterology) in Residence*
- Carol Jeanne MacArthur, M.D. University of California, Los Angeles, *Assistant Professor of Otolaryngology in Residence*
- J. Raul Magana, Ph.D. University of California, Irvine, *Associate Clinical Professor of Medicine*
- J. Carlos Maggi, M.D. Cayetano Heredia Medical School (Peru), *Associate Adjunct Professor of Pediatrics*
- Gerald Maguire, M.D. St. Louis University, *Assistant Clinical Professor of Psychiatry*
- Donald J. Mahon, M.D. Baylor University College of Medicine, *Assistant Clinical Professor of Medicine (Cardiology)*
- C. Kees Mahutte, M.D. McMaster University (Canada), Ph.D. University of Waterloo (Canada), *Professor of Medicine (Pulmonary) in Residence*
- Carol A. Major, M.D. Case Western Reserve University School of Medicine, *Assistant Professor of Obstetrics and Gynecology*
- Alberto Manetta, M.D. University of Buenos Aires, *Senior Associate Dean, College of Medicine, and Associate Professor of Obstetrics and Gynecology (Oncology)*
- Melvin I. Marks, M.D. McGill University, *Professor of Pediatrics in Residence*
- Donald C. Martin, M.D. University of British Columbia (Canada), *Professor Emeritus of Surgery (Urology)*
- Kimberly A. Martin, M.D. McGill University, *Assistant Professor of Obstetrics and Gynecology in Residence*
- Rick Martin, M.D. University of Utah, Salt Lake, *Assistant Professor of Pediatrics in Residence*
- G. Robert Mason, M.D. University of Chicago, Ph.D. Stanford University, *Professor Emeritus of Surgery*
- Rae Matsumoto, Ph.D. Brown University, *Assistant Professor of Neurology in Residence*
- William J. Mautz, Ph.D. Cornell University, *Associate Adjunct Professor of Community and Environmental Medicine*
- Robert K. McBurnett, Ph.D. University of Georgia, *Assistant Professor of Pediatrics in Residence*
- Eric McCloud, M.D. University of Nebraska, *Assistant Clinical Professor of Pediatrics*
- Jerry L. McCullough, Ph.D. Yale University, *Professor of Dermatology*
- Kathryn F. McGonigle, M.D. St. Louis University, *Assistant Adjunct Professor of Gynecological Surgery*
- Frederick L. McGuire, Ph.D. New York University, *Professor Emeritus of Psychiatry and Human Behavior*
- Calvin S. McLaughlin, Ph.D. Massachusetts Institute of Technology, *Professor of Biological Chemistry, Biological Sciences, Community and Environmental Medicine, and Ophthalmology*
- Patrick S. McMahon, M.D. Temple University, *Assistant Professor of Orthopedic Surgery*
- Daniel B. Menzel, Ph.D. University of California, Berkeley, *Department Chair and Professor of Community and Environmental Medicine*
- Hooshang Meshkinpour, M.D. Tehran University, School of Medicine (Iran), *Chief (Acting) of Gastroenterology and Professor of Medicine (Gastroenterology)*
- Frank L. Meyskens, M.D. University of California, San Francisco, *Chief of Hematology/Oncology, Professor of Medicine (Hematology/Oncology) and Biochemistry, and Director of the Chao Family Clinical Cancer Research Center*
- Don R. Miller, M.D. University of Kansas Medical School, *Professor Emeritus of Surgery (Thoracic)*
- Jeffrey Milliken, M.D. University of Michigan, *Associate Clinical Professor of Cardiothoracic Surgery*
- Eric N. C. Milne, M.B., Ch.B., F.R.C.R. University of Edinburgh (Scotland), *Professor of Radiological Sciences and Medicine*
- Norah Milne, M.B., Ch.B. University of Edinburgh (Scotland), *Associate Adjunct Professor of Radiological Sciences (Nuclear Medicine)*
- Shiraz Mishra, M.D. Grant University (Bombay), Ph.D. University of California, Irvine, *Assistant Adjunct Professor of Medicine and Social Ecology*
- Masato Mitsushashi, M.D., Ph.D. Gunma University (Japan), *Associate Adjunct Professor of Pathology*
- Houchang D. Modanlou, M.D. University of Rome (Italy), *Associate Professor of Pediatrics in Residence*
- Sabee Molloy, Ph.D. University of Wisconsin, *Associate Professor of Radiological Sciences and Medicine in Residence*
- Edgar M. Moran, M.D. University of Bucharest (Romania), *Professor of Medicine (Hematology) in Residence*
- N. Charles Morcos, M.D. University of Juarez (Mexico), Ph.D. University of Calgary (Canada), *Associate Adjunct Professor of Medicine (Cardiology)*
- Beverly C. Morgan, M.D. Duke University, *Professor of Pediatrics*
- Timothy R. Morgan, M.D. Emory University, *Associate Professor of Medicine (Gastroenterology) in Residence*
- David K. Morohashi, M.D. University of Washington, *Associate Clinical Professor of Family Medicine*
- Debra Morrison, M.D. Northwestern University, *Assistant Clinical Professor of Anesthesiology*
- H. David Mosier, M.D. The Johns Hopkins University School of Medicine, *Professor of Pediatrics and Pathology*
- Sarah S. Mosko, Ph.D. Princeton University, *Associate Adjunct Professor of Neurology*
- Harris S. Moyed, Ph.D. University of Pennsylvania, *Professor Emeritus of Microbiology and Molecular Genetics*
- J. Dennis Mull, M.D. Medical College of Virginia, *Professor Emeritus of Family Medicine*
- Maury Mulligan, M.D. Mt. Sinai University, New York, *Associate Professor of Clinical Medicine (Infectious Disease)*
- Penny Murata, M.D. Medical College of Pennsylvania, *Assistant Clinical Professor of Pediatrics*
- Yuji Murata, M.D. Osaka University (Japan), *Professor of Obstetrics and Gynecology, and Radiological Sciences*
- Cynthia T. Murphy, M.D. University of South Dakota, *Assistant Clinical Professor of Physical Medicine and Rehabilitation*
- Natalie Murray, M.D. University of Southern California, *Assistant Clinical Professor of Medicine (Gastroenterology)*
- Michael P. Nageotte, M.D. Loyola University, Stritch Medical School, *Associate Professor of Obstetrics and Gynecology in Residence*
- Ahmad A. Najafi, Ph.D. University of Bath (England), *Assistant Adjunct Professor of Psychiatry and Human Behavior*
- Wadie I. Najm, M.D. Brussels University, *Assistant Clinical Professor of Family Medicine*
- Orhan Nalcioğlu, Ph.D. University of Oregon, *Professor of Radiological Sciences, Medicine, Electrical Engineering, and Physics and Astronomy*
- Vandana Nanda, M.D. Rutgers University, *Assistant Clinical Professor of Dermatology*
- Joseph Neev, Ph.D. Colorado School of Mines, *Assistant Professor of Surgery in Residence*
- J. Stuart Nelson, M.D. University of Southern California, Ph.D. University of California, Irvine, *Associate Professor of Surgery and Dermatology in Residence*
- Linda D. Nelson, Ph.D. Ohio State University, *Associate Professor of Psychiatry in Residence*
- Thomas L. Nelson, M.D. University of California, San Francisco, *Professor Emeritus of Pediatrics*
- Samuel Nerenberg, M.D., Ph.D. University of Minnesota, *Professor in Residence Emeritus of Pathology*
- Richard S. Newman, M.D. University of California, Irvine, *Associate Clinical Professor of Pathology*
- Huan-Vu Nguyen, M.D. University of California, San Diego, *Assistant Clinical Professor of Medicine*

- Lan Thi-Xuan Nguyen, M.D. University of California, San Diego, *Assistant Clinical Professor of Medicine*
- Trahn-Tam Nguyen, M.D. Loyola Stritch University, *Assistant Clinical Professor of Medicine*
- Masayasu Nomura, Ph.D. University of Tokyo (Japan), *Professor of Biological Chemistry, Microbiology and Molecular Genetics, and Biological Sciences, and Grace Beekhuis Bell Chair in Biological Chemistry*
- Kenneth L. Nudleman, M.D. Queen's University (Canada), *Clinical Professor of Neurology and Pathology*
- Eliezer Nussbaum, M.D. Sackler Medical School, Tel Aviv University (Israel), *Adjunct Professor of Pediatrics*
- Jose A. Ocariz, M.D. University of Rosario (Argentina), *Associate Clinical Professor of Pathology*
- Diane O'Dowd, Ph.D. University of California, San Diego, *Associate Professor of Biological Sciences and of Anatomy and Neurobiology*
- Betty H. Olson, Ph.D. University of California, Berkeley, *Professor of Social Ecology, Biochemical Engineering, and Community and Environmental Medicine*
- Harold G. Olson, M.D. University of California, Irvine, *Associate Professor of Medicine (Cardiology) in Residence*
- Kathryn E. Osann, Ph.D. University of California, Berkeley, *Assistant Adjunct Professor of Medicine*
- Donald R. Ostergard, M.D. University of California, San Francisco, *Professor of Obstetrics and Gynecology (Urology) in Residence*
- Richard A. Ott, M.D. Loyola University (Illinois), *Associate Adjunct Professor of Surgery (Thoracic) in Residence*
- Madeleine V. Pahl, M.D. University of California, Irvine, *Associate Professor of Medicine (Nephrology/Renal)*
- Marilyn J. Pais, M.D. Medical College of Pennsylvania, *Senior Lecturer Emerita in Radiological Sciences*
- Sophocles N. Panagon, M.D. University of California, Irvine, *Clinical Professor of Medicine (General Internal Medicine and Primary Care) and Pediatrics*
- Elizabeth S. Parker, Ph.D. University of California, Irvine, *Adjunct Professor of Neurology and Neurosurgery*
- Lawrence N. Parker, M.D. Stanford University School of Medicine, *Professor of Medicine (Endocrinology) in Residence*
- Victor Passy, M.D. University of California, Irvine, *Senior Lecturer Emeritus in Otolaryngology*
- Daniel Pelot, M.D. Howard University School of Medicine, *Senior Lecturer in Medicine (Gastroenterology)*
- Ellena Peterson, Ph.D. Georgetown University, *Associate Professor of Pathology in Residence*
- Robert I. Pfeffer, M.D. Harvard Medical School, *Associate Professor of Neurology in Residence*
- Linda Pfiffner, Ph.D. State University of New York, Stonybrook, *Assistant Professor of Pediatrics in Residence*
- Robert F. Phalen, Ph.D. University of Rochester, *Professor of Community and Environmental Medicine, and Medicine*
- Gary Phipps, M.D. Ohio State, *Associate Clinical Professor of Orthopedic Surgery*
- Hubert C. Pirkle, M.D. Indiana University, *Professor Emeritus of Pathology*
- Robert W. Porter, M.D., Ph.D. Northwestern University Medical School, *Professor Emeritus of Surgery (Neurological) in Residence*
- Manuel Porto, M.D. Rutgers College of Medicine, *Chief of Maternal-Fetal Medicine and Associate Professor of Clinical Obstetrics and Gynecology, and Pediatrics*
- Steven G. Potkin, M.D. Washington University, *Professor of Psychiatry and Human Behavior*
- Thomas Poulos, Ph.D. University of California, San Diego, *Professor of Molecular Biology and Biochemistry, Physiology and Biophysics, and Biological Sciences*
- Pamela E. Prete, M.D. Hahnemann Medical College, *Professor of Medicine (Rheumatology) in Residence*
- Henry W. Pribram, M.B., B.S. Cambridge University (England), *Professor Emeritus of Radiological Sciences*
- Michael D. Prislin, M.D. Georgetown University, *Department Chair and Associate Professor of Clinical Family Medicine*
- Ralph E. Purdy, Ph.D. University of California, Los Angeles, *Professor of Pharmacology*
- Edward Quilligan, M.D. Ohio State University, *Professor Emeritus of Obstetrics and Gynecology*
- W. Leslie Quinlivan, M.B., B.S., University of London (England), *Professor Emeritus of Obstetrics and Gynecology*
- Stephen Radecki, Ph.D. University of California, Los Angeles, *Associate Clinical Professor of Family Medicine*
- Saroja V. Rajashekara, M.D. University of Delhi, *Associate Clinical Professor of Anesthesiology*
- Deepak Rajpoot, M.B.B.S. Indore University (India), *Assistant Clinical Professor of Pediatrics*
- Lilly E. Ramirez-Boyd, M.D. University of Minnesota, *Assistant Clinical Professor of Obstetrics and Gynecology*
- Nilam S. Ramsinghani, M.B., B.S. Grant Medical College, *Associate Clinical Professor of Radiation Oncology*
- Penny Randall, M.D. University of Louisville, *Assistant Clinical Professor of Psychiatry*
- Virgil Raymundo, M.D. University of California, Irvine, *Assistant Clinical Professor of Medicine (Primary Care)*
- Louis Recher, M.D. University of Basel, *Professor Emeritus of Pathology in Residence*
- J. Leslie Redpath, Ph.D. University of Newcastle (England), *Professor of Radiation Oncology*
- Cheryl L. Reid, M.D. University of Oklahoma, *Associate Professor of Medicine (Cardiology) in Residence*
- Christopher Reist, M.D. University of Virginia Medical School, *Assistant Professor of Psychiatry in Residence*
- Qiushi Ren, Ph.D. Ohio State University, *Visiting Assistant Professor of Ophthalmology*
- Cynthia Reyes-Ferral, M.D. Harvard University, *Assistant Clinical Professor of Surgery*
- Jalil Riazzi, M.D. Free University of Brussels, *Associate Clinical Professor of Anesthesiology*
- Charles E. Ribak, Ph.D. Boston University, *Professor of Anatomy and Neurobiology and Biological Sciences*
- Richard T. Robertson, Ph.D. University of California, Irvine, *Chair of the Department of Anatomy and Neurobiology, and Professor of Anatomy and Neurobiology, and Biological Sciences*
- W. Edward Robinson, M.D., Ph.D. Vanderbilt University, *Assistant Professor of Pathology in Residence*
- Werner Roeck, Dipl. Eng. State School of Engineering, Hagen (Germany), *Clinical Professor of Radiological Sciences*
- Daeyoung Roh, M.D. Oral Roberts University, *Assistant Professor of Medicine (Nephrology) in Residence*
- Francisco J. Rojas, Ph.D. Medical College of Georgia, *Associate Professor of Obstetrics and Gynecology in Residence*
- Gregory F. Rosen, M.D. University of Colorado, *Associate Adjunct Professor of Obstetrics and Gynecology in Residence*
- Helen Ross, M.D. University of California, Los Angeles, *Assistant Professor of Medicine (Hematology) in Residence*
- Gerald Roth, M.D. Columbia University, *Assistant Adjunct Professor of Radiological Sciences*
- James Roum, M.D., Ph.D. University of California, Irvine, *Assistant Professor of Medicine*
- Arthur Rubel, Ph.D. University of North Carolina, *Professor Emeritus of Family Medicine*
- Stanley Rubin, M.D. Hahnemann University, *Professor of Medicine in Residence*
- Lloyd Rucker, M.D. University of Kentucky, *Clinical Professor of Medicine (General Internal Medicine and Primary Care)*
- Ervin P. Ruzics, M.D. University of Southern California, *Assistant Clinical Professor of Surgery (Urology)*
- Bocor Said, Ph.D. City University of New York, *Assistant Adjunct Professor of Community and Environmental Medicine*
- Hamid M. Said, Ph.D. University of Aston (England), *Professor of Medicine (Gastroenterology), Physiology and Biophysics, and Pediatrics in Residence*
- Michael K. Samoszuk, M.D. Harvard Medical College, *Associate Professor of Pathology*
- Antonio Sanchez, M.D. University of Miami Medical School, *Associate Clinical Professor of Anesthesiology*
- Christy I. Sandborg, M.D. University of California, Los Angeles, *Associate Adjunct Professor of Medicine (Rheumatology) and Pediatrics*
- Curt A. Sandman, Ph.D. Louisiana State University, *Professor of Psychiatry and Human Behavior in Residence*
- Suzanne B. Sandmeyer, Ph.D. University of Washington, *Professor of Microbiology and Molecular Genetics, and Biological Sciences*
- José Y. Anguiano Sandoval, M.D. University of California, Los Angeles, *Associate Clinical Professor of Family Medicine*

- Rozanne M. Sandri-Goldin, Ph.D. The Johns Hopkins University, *Professor of Microbiology and Molecular Genetics, and Biological Sciences*
- I. James Sarfeh, M.D. Albany Medical College, *Professor of Surgery (General)*
- Jeff Sarkozi, M.D. University of Toronto (Canada), *Associate Clinical Professor of Medicine (Rheumatology)*
- Scott Sasse, M.D. University of Wisconsin, *Assistant Professor of Medicine in Residence*
- Jon Sassin, M.D. St. Louis University, *Professor Emeritus of Neurology*
- Catherine S. Sassoon, M.D. Gadjah Mada University School of Medicine (Indonesia), *Associate Professor of Medicine (Pulmonary) in Residence*
- Steven L. Schandler, Ph.D. University of Southern California, *Associate Adjunct Professor of Psychiatry and Human Behavior*
- Peter L. Schnall, M.D. Stanford University, M.P.H. Columbia University, *Associate Clinical Professor of Medicine*
- Michael Schneider, M.D. Case Western Reserve University, *Assistant Clinical Professor of Anesthesiology*
- Darryl M. See, M.D. University of California, Irvine, *Assistant Clinical Professor of Medicine*
- Jack L. Segal, M.D. Loyola University of Chicago, Stritch School of Medicine, *Associate Professor of Medicine (Internal Medicine) in Residence*
- Michael E. Selsted, M.D., Ph.D. University of California, Los Angeles, *Professor of Pathology and of Microbiology and Molecular Genetics*
- Bert L. Semler, Ph.D. University of California, San Diego, *Professor of Microbiology and Molecular Genetics, and Biological Sciences*
- Gaurang Shah, M.D. University of Baroda Medical College (India), *Associate Adjunct Professor of Medicine (Renal Diseases)*
- Nitin Shah, M.B., B.S. University of Baroda Medical College (India), *Assistant Professor of Anesthesiology in Residence*
- Allan C. Shanberg, M.D. University of Chicago Medical School, *Clinical Professor of Surgery (Urology)*
- Ronald C. Shank, Ph.D. Massachusetts Institute of Technology, *Professor of Community and Environmental Medicine*
- William Rodman Shankle, M.D. Brown University Medical School, *Assistant Adjunct Professor of Neurology and of Information and Computer Science*
- Janet E. Shanks, Ph.D. University of Iowa, *Associate Professor of Otolaryngology in Residence*
- Deane H. Shapiro, Jr., Ph.D. Stanford University, *Professor of Psychiatry and Human Behavior, and Social Ecology in Residence*
- Johanna F. Shapiro, Ph.D. Stanford University, *Chair (Acting) and Professor of Family Medicine and Professor of Psychiatry and Human Behavior*
- Ronald A. Sherman, M.D. University of California, Los Angeles, *Assistant Clinical Professor of Medicine (Geriatrics)*
- Cynthia H. Sholly, M.D. University of Utah, *Assistant Clinical Professor of Pediatrics*
- Paul Silverman, Ph.D. University of Liverpool (England), *Associate Chancellor for the Center for Health Sciences and Adjunct Professor of Medicine*
- Harry Skinner, M.D. University of South Carolina, Ph.D. University of California, Berkeley, *Chair and Professor of Orthopedic Surgery and Professor of Mechanical and Aerospace Engineering*
- Jack Sklansky, D.Sc. Columbia University, *Professor of Electrical and Computer Engineering, and Radiological Sciences*
- Lewis M. Slater, M.D. University of Vermont Medical School, *Professor of Medicine (Hematology/Oncology) and Pathology*
- Martin A. Smith, Ph.D. Newcastle University (England), *Associate Professor of Anatomy and Neurobiology, and Developmental and Cell Biology*
- Moyra Smith, M.D. University of Pretoria (South Africa), Ph.D. University College (London), *Professor of Pediatrics, Microbiology and Molecular Genetics, Obstetrics and Gynecology, and Biological Chemistry*
- Betty J. Snell, M.S.N. University of Colorado; Ph.D. Oregon Health Sciences University, *Associate Clinical Professor of Obstetrics and Gynecology*
- Kenneth N. Sokolski, M.D. University of California, Irvine, *Assistant Professor of Psychiatry in Residence*
- Ivan Soltesz, Ph.D. L. Eötvös University (Hungary), *Assistant Professor of Anatomy and Neurobiology, and Developmental and Cell Biology*
- Charles Sondhaus, Ph.D. University of California, Berkeley, *Professor Emeritus of Radiological Sciences*
- Gerald S. Spear, M.D. The Johns Hopkins University, *Professor of Pathology*
- M. Anne Spence, Ph.D. University of Hawaii, *Professor of Pediatrics*
- Donald R. Sperling, M.D. Yale School of Medicine, *Professor of Pediatrics and Radiological Sciences*
- Lawrence D. Sporty, M.D. State University of New York, Downstate, *Senior Lecturer in Psychiatry and Human Behavior, and Neurology*
- Eric J. Stanbridge, Ph.D. Stanford University, *Professor of Microbiology and Molecular Genetics and of Biological Sciences*
- Arnold Starr, M.D. New York University School of Medicine, *Professor Emeritus of Neurology*
- Robert E. Steele, Ph.D. Yale University, *Associate Professor of Biological Chemistry and Biological Sciences*
- Ralph Steiger, M.D. University of California, Los Angeles, *Assistant Adjunct Professor of Obstetrics and Gynecology*
- Larry Stein, Ph.D. University of Iowa, *Department Chair and Professor of Pharmacology and Professor of Psychiatry and Human Behavior*
- Marsha K. Stein, Ph.D. University of Pennsylvania, *Clinical Professor of Psychiatry and Human Behavior*
- Kathryn Steinhaus, M.S. University of Colorado, *Associate Clinical Professor of Pediatrics (Genetics and Development)*
- Edward A. Stemmer, M.D. University of Chicago, *Professor of Surgery (Thoracic) in Residence*
- Deborah C. Stewart, M.D. University of California, San Francisco, *Associate Dean, College of Medicine, and Associate Professor of Clinical Pediatrics, Medicine, and Obstetrics and Gynecology*
- Sergio C. Stone, M.D. University of Chile, *Professor of Obstetrics and Gynecology and Pathology*
- Harris R. Stutman, M.D. Pennsylvania State University, *Associate Professor of Pediatrics in Residence*
- Mustafa Suleiman, M.D. Texas University, *Assistant Clinical Professor of Medicine*
- Donald F. Summers, M.D. University of Illinois, *Professor of Medicine, Microbiology and Molecular Genetics, and Biological Sciences*
- James M. Swanson, Ph.D. The Ohio State University, *Professor of Pediatrics and of Psychiatry and Human Behavior in Residence*
- Richard Swensson, M.D. University of Kansas, *Clinical Professor of Pediatrics*
- John E. Swett, Ph.D. University of California, Los Angeles, *Professor Emeritus of Anatomy and Neurobiology*
- Paul S. Sypherd, Ph.D. Yale University, *Professor Emeritus of Microbiology and Molecular Genetics*
- Sandor Szabo, M.D. University of Belgrade, Ph.D. University of Montreal, *Professor of Pathology and Pharmacology in Residence*
- Yona Tadir, M.D. Tel Aviv University School of Medicine, *Professor of Obstetrics and Gynecology in Residence*
- Siu Tang, M.B., B.S. University of Hong Kong, Ph.D. University of Toronto (Canada), *Department Chair and Professor of Psychiatry and Human Behavior and Professor of Pharmacology in Residence*
- Andrzej S. Tarnawski, M.D. University Medical School (Poland), *Professor of Medicine (Gastroenterology) in Residence*
- Jamshid Tehranzadeh, M.D. Pahlavi University Medical School (Iran), *Professor of Radiological Sciences and Orthopedic Surgery*
- Sujata Tewari, Ph.D. McGill University (Canada), *Associate Professor of Psychiatry and Human Behavior and Biological Sciences*
- Janis W. Thereault, M.D. University of Nebraska, *Assistant Clinical Professor of Anesthesiology*
- Raghu Thiruvengadam, Madras (India), *Assistant Professor of Medicine in Residence*
- James A. Thompson, M.D., Ph.D. University of California, Irvine, *Assistant Clinical Professor of Pathology*
- William B. Thompson, Jr., M.D. University of Southern California, *Professor Emeritus of Obstetrics and Gynecology*
- Lauri D. Thrupp, M.D. University of Washington School of Medicine, *Professor Emerita of Medicine (Infectious Diseases)*
- James A. Till, Ph.D. University of Iowa, *Associate Clinical Professor of Otolaryngology*
- Jeremiah G. Tilles, M.D. Harvard Medical School, *Associate Dean, College of Medicine, Chief of Infectious Diseases, and Professor of Medicine (Infectious Diseases) and Microbiology and Molecular Genetics*
- Susan Tiso, M.S.N. University of California, Los Angeles, *Assistant Clinical Professor of Family Medicine*
- Jerome S. Tobis, M.D. Chicago Medical School, *Professor Emeritus of Physical Medicine and Rehabilitation*
- Jonathan M. Tobis, M.D. Albert Einstein College of Medicine, *Professor of Medicine (Cardiology) and Radiological Sciences*
- Gail T. Tominaga, M.D. University of California, Irvine, *Assistant Professor of Surgery (General) in Residence*
- Julianne Toohey, M.D. University of California, Irvine, *Assistant Clinical Professor of Obstetrics and Gynecology*
- Simin Torabzadeh, M.D. Universidad Central del Este (Dominican Republic), *Assistant Clinical Professor of Medicine (Geriatrics)*

- Paul E. Touchette, Ed.D. Harvard University, *Adjunct Professor of Pediatrics*
- Craig V. Towers, M.D. University of Kansas, *Associate Professor of Obstetrics and Gynecology (Maternal-Fetal Medicine) in Residence*
- Huy T. Tran, D. O. College of Osteopathic Medicine, Pomona, *Assistant Clinical Professor of Family Medicine*
- Narendra S. Trivedi, M.B., B.S. Municipal Medical College, Ahmedabad (India), *Associate Clinical Professor of Anesthesiology*
- Bruce Tromberg, Ph.D. University of Tennessee, *Associate Professor of Surgery and Physiology and Biophysics in Residence*
- Daniel D. Truong, M.D. University of Freiburg (Germany), *Assistant Professor of Neurology in Residence*
- Martin C. Tynan, M.B.B.C.H. Trinity College (Ireland), *Assistant Clinical Professor of Orthopedic Surgery*
- Stanley van den Noort, M.D. Harvard Medical School, *Department Chair and Professor Emeritus of Neurology*
- Steven A. Vasilier, M.D. University of Southern California, *Assistant Professor of Obstetrics and Gynecology in Residence*
- Nosratollah D. Vaziri, M.D. Tehran University Medical School (Iran), *Chief of Nephrology and Chair (Acting) and Professor of Medicine (Renal Diseases)*
- Halvor Vermund, M.D. University of Minnesota, *Professor Emeritus of Radiological Sciences*
- Larry E. Vickery, Ph.D. University of California, Santa Barbara, *Professor of Physiology and Biophysics, Biological Sciences, and Biological Chemistry*
- Bruno Volk, M.D. University of Vienna, *Professor in Residence Emeritus of Pathology*
- Pathik Wadhwa, M.B., B.S. University of Poona (India); Ph.D. University of California, Irvine, *Assistant Adjunct Professor of Obstetrics and Gynecology*
- Feizal Waffarn, M.B., B.S. Madras Medical College (India), *Associate Professor of Pediatrics (Neonatology) in Residence*
- Howard B. Waitzkin, M.D., Ph.D. Harvard University, *Professor of Medicine, Social Sciences, and Social Ecology*
- Akio Wakabayashi, M.D. University of Tokyo Medical School (Japan), *Professor Emeritus of Surgery (Thoracic)*
- Ann P. Walker, M.A. University of California, Irvine, *Associate Adjunct Professor of Pediatrics, and Obstetrics and Gynecology*
- Cheryl A. Walker, M.D. University of California, San Francisco, *Assistant Clinical Professor of Obstetrics and Gynecology*
- Roger N. Walsh, M.B.B.S., Ph.D. University of Queensland (Australia), *Professor of Psychiatry and Human Behavior, Philosophy, and Anthropology*
- Felix Wang, M.D. University of California, Irvine, *Associate Clinical Professor of Radiology*
- Nai-San Wang, Ph.D. McGill University, *Professor of Pathology in Residence*
- Ping H. Wang, M.D. Kaoshing University, *Assistant Professor of Medicine and Biological Chemistry*
- Michael G. Ward, M.D. Louisiana State University, *Associate Clinical Professor of Anesthesiology*
- Marian Waterman, Ph.D. University of California, San Diego, *Assistant Professor of Microbiology and Molecular Genetics and of Biological Sciences*
- Jonathan Waters, M.D. George Washington University, *Assistant Clinical Professor of Anesthesiology*
- Eckard Weber, M.D. University of Ulm, School of Medicine (Germany), *Professor of Pharmacology*
- Michael A. Weber, M.B., B.S. Sydney University (Australia), *Professor of Medicine in Residence (Cardiology)*
- Peter B. Weber, M.D. Emory University, *Assistant Clinical Professor of Neurosurgery*
- Paul F. Wehrle, M.D. Tulane University, *Professor in Residence Emeritus of Pediatrics*
- Gerald D. Weinstein, M.D. University of Pennsylvania School of Medicine, *Department Chair and Professor of Dermatology*
- John H. Weiss, M.D., Ph.D. Stanford University, *Assistant Professor of Neurology, Anatomy and Neurobiology, and Biological Sciences*
- Terry Wepsic, M.D. Yale University, *Clinical Professor of Pathology and Associate Dean of Long Beach Veterans' Administration Medical Center Programs*
- Robert Wesley, M.D. Yale University, *Associate Professor of Medicine (Cardiology) in Residence*
- Carol K. Whalen, Ph.D. University of California, Los Angeles, *Department Chair of Psychology and Social Behavior and Professor of Social Ecology and of Psychiatry and Human Behavior*
- Gerald Whipple, M.D. University of California, San Francisco, *Professor Emeritus of Medicine*
- Stephen H. White, Ph.D. University of Washington, *Professor of Physiology and Biophysics, and Biological Sciences*
- James L. Whittenberger, M.D. University of Chicago, *Professor in Residence Emeritus of Community and Environmental Medicine*
- Tim Wigal, Ph.D. University of Texas, Austin, *Assistant Adjunct Professor of Pediatrics*
- James H. Williams, Jr., M.D. Harvard University, *Associate Adjunct Professor of Medicine (Pulmonary)*
- Russell A. Williams, M.B. B.S. University of Sydney, *Professor of Surgery*
- Archie F. Wilson, M.D. University of California, San Francisco, Ph.D. University of California, Los Angeles, *Chief of Pulmonary Disease and Professor of Medicine (Pulmonary)*
- Samuel Eric Wilson, M.D. Wayne State University, *Department Chair and Professor of Surgery*
- Robert L. Winer, M.D. Case Western Reserve University, *Adjunct Professor of Medicine (Nephrology/Renal)*
- Rodney M. Wishnow, M.D. Washington University, School of Medicine, *Associate Professor of Medicine (Infectious Diseases), and Microbiology and Molecular Genetics in Residence*
- Corinne G. Wong, Ph.D. University of California, San Francisco, *Assistant Adjunct Professor of Ophthalmology*
- David H. Wong, M.D. University of California, Irvine, Pharm.D. University of Southern California, *Associate Clinical Professor of Anesthesiology*
- Edward K. Wong, Jr., M.D. University of Southern California, *Associate Professor of Ophthalmology*
- Nathan D. Wong, Ph.D. Yale University, *Associate Adjunct Professor of Medicine (Cardiology)*
- Joseph Chong-Sang Wu, M.D. University of California, Irvine, *Associate Professor of Psychiatry and Human Behavior in Residence*
- Sing-Yung Wu, M.D. The Johns Hopkins University, Ph.D. University of Washington, *Professor of Radiological Sciences and Medicine in Residence*
- Frederic A. Wyle, M.D. University of Pennsylvania Medical School, *Vice Chair, Department of Medicine, and Professor of Clinical Medicine (Infectious Diseases)*
- Liva Yates, M.D. University of California, San Diego, *Assistant Adjunct Professor of Physical Medicine and Rehabilitation*
- Caroll Yap, M.D. Stanford University, *Assistant Clinical Professor of Medicine (Primary Care)*
- Billy Yee, M.D. University of California, Davis, *Associate Adjunct Professor of Obstetrics and Gynecology*
- Robert R. Young, M.D. Harvard University, *Vice Chair and Professor of Neurology in Residence*
- Ronald F. Young, M.D. State University of New York, *Professor Emeritus of Neurosurgery*
- Jen Yu, M.D. National Taiwan University (Taiwan), Ph.D. University of Pennsylvania, *Department Chair and Professor of Physical Medicine and Rehabilitation*
- Paul Zeltzer, M.D. University of California, Irvine, *Adjunct Professor of Pediatrics*
- Karin E. Zenk, Pharm.D. University of Southern California, *Associate Adjunct Professor of Pediatrics*
- Susan E. Ziemba, M.D. University of California, Davis, *Assistant Clinical Professor of Medicine (Internal Medicine)*

## OVERVIEW

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.

### Mission Statement

The UCI College of Medicine is dedicated to advancing the knowledge and practice of medicine for the benefit of society. This mission is achieved through programs of excellence in:

**Education:** The College of Medicine is committed to provide educational programs of the highest quality to medical students, M.D./Ph.D. students, residents, fellows, allied health, and graduate academic students. Further, the College of Medicine's educational programs are designed to stimulate self-learning and critical inquiry and to exemplify those human values necessary to fulfill the professional commitments of a career in the health sciences.

**Research:** Excellence in research is an essential feature of the College of Medicine. Therefore, the College is committed to develop and maintain research programs in the health sciences which seek to advance basic scientific knowledge and the prevention, diagnosis, and treatment of human illness.

**Clinical Care:** Recognizing its responsibility to meet the educational needs of students and the diverse needs of the patient community, the College of Medicine is committed to programs of clinical excellence across the spectrum of patient care disciplines.

**Service to the Public:** As a publicly assisted institution, the College of Medicine is committed to serve the community as a vital resource of expertise and knowledge. The College further serves the public through the training of health professionals whose backgrounds reflect California's ethnic and cultural diversity and whose professional careers address California's health care needs.

**J. Edward Berk/Alumni Medical Education Center:** The College of Medicine recently opened a training facility for students and residents. The training center has eight fully functional physical examination rooms equipped with wall-mounted video cameras which feed directly into a main monitoring room. This equipment allows faculty to observe students and residents without being intrusive. The encounters can be recorded and viewed with the faculty member at another time in one of the two faculty development rooms. In addition, the training center also has a skills laboratory in which students learn the proper methods for gowning, giving injections, taking blood pressure, and giving CPR.

The training center also houses "HARVEY," a full-sized Cardiology Patient Simulator specifically designed to demonstrate various cardiovascular disease findings. "HARVEY" can be used in conjunction with the UMedic Multimedia Computer Assisted Instruction system which is a self-learning computerized workstation. UCI is proud to be the first school on the west coast to utilize these multimedia systems in their curriculum.

### 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 student center.

In addition, the 40,000-square-foot Plumwood House is devoted to basic research in the fields of neurological disorders, diagnostic systems and reagents, and industrial bioreactors. In this facility, faculty from the Department of Biological Chemistry share laboratory space with corporate researchers.

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, cardiovascular disease, and ophthalmologic procedures.

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 primary care and specialty services including: obstetrics and gynecology, pediatrics, dermatology, ophthalmology, cardiology, orthopedics, gastroenterology, and neurology. Special programs in diabetes, multiple sclerosis, Alzheimer's disease, 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.

### 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, clinics 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, 194 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 462-licensed-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, anesthesiology, orthopedics, geriatrics, oncology, neurosurgery, otolaryngology, and radiation oncology. The UCI Medical Center also has cardiac, pediatric, neonatal, respiratory, burn, medical-surgical, and neurosciences 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 is continuing. Recently completed areas include intensive care units for medical, surgical, neurological, and cardiac patients, as well as the Chao Family Clinical Cancer Research Center which is a National Cancer Institute designated cancer center. The Center encompasses 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. In addition, the lobby, pathology laboratories, and general medical floors are being upgraded. A 95-bed Neuropsychiatric Center for treatment and research of mental illness recently opened. The UCI Medical Pavilion, a companion facility to the UCI Medical Plaza on campus houses primary and multispecialty care facilities.

### UCI-COMMUNITY CLINIC OF ORANGE COUNTY

The Community Clinic of Orange County (CCOC) is the only federally supported urban community health center in Orange County. The clinic provides broad primary care services to the community's medically underserved and provides refugee preventive health services to new immigrants entering Orange County. The clinic is the principal ambulatory clinical training site utilized by the Department of Family Medicine for its medical student and resident educational programs. CCOC provides care for approximately 40,000 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 Long Beach Veterans Administration Medical Center 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 (Anaheim, Bellflower, and Riverside), Children's Hospital of Los Angeles, Metropolitan State Hospital (Norwalk), The City of Hope Medical Center (Duarte), Rancho Los Amigos Hospital (Downey), Western Medical Center (Tustin/Santa Ana), the Kern Medical Center (Bakersfield), Clínica Sierra Vista (Lamont), Hoag Memorial Hospital Presbyterian (Newport Beach), Lanterman Developmental Center (Pomona), Fountain Valley Hospital and Medical Center, Laguna Beach Community Clinic, Children's Hospital of Orange County, Good Samaritan (Los Angeles), and the Orange County Health Care Agency/Public Health Clinic.

## UCI Medical Alumni Association

Nancy Oelson, Executive Director

(714) 824-7155

The UCI College of Medicine is an outgrowth of what began in 1896 as the Pacific College of Osteopathy. The College became part of the UC system when the Irvine campus opened in 1965. The UCI Medical Alumni Association (UCIMAA) represents the nearly 5,000 alumni of the College, and provides many opportunities for student-alumni interaction. Among the programs and services UCIMAA offers for students are: recruiting alumni volunteers to serve as mentors, providing financial support for many student programs throughout the year, and helping students obtain financial and other resources they need for research, educational, networking, and social activities, sponsoring several awards given out each year at Honors Night, and providing short-term emergency loans for students in need. UCIMAA also sponsors continuing medical education programs. These seminars are always open to students at no charge. The College celebrated its one-hundredth anniversary in June 1996.

## THE M.D. PROGRAM

### Admission

All inquiries regarding admission programs and procedures of the UCI College of Medicine should be directed to:

**Office of Admission  
College of Medicine  
University of California, Irvine  
P.O. Box 4089  
Irvine, CA 92697-4089  
(714) 824-5388**

The UCI 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  
2450 N Street, N.W., Suite 201  
Washington, D.C. 20037-1131**

Applications may be submitted between June 1 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 5,000 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. Applications are initially screened on the basis of both the student's academic performance (GPA and MCAT scores) and on non-cognitive variables that reflect depth and breadth of life experience.

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.

In addition to scholastic achievement, attributes deemed desirable in prospective students include leadership ability and participation in extracurricular activities such as research and medically related experience, as well as community service. The Admissions Committee also 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 a complex array of medical services, a commitment to sensitivity to individual patient needs, and a dedication to the advancement of the art, science, and practice of medicine.

Applicants may expect to receive notification about their admission status from the College any time from November 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, contact:

**WICHE Student Exchange Program**  
P.O. Drawer P  
Boulder, CO 80301-9752  
(303) 541-0214

## 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 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 (with a C grade or higher). 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 biology . . .	12	18

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.)

One quarter of college level . . . . .	2.7	4
calculus		

One semester/two quarters of . . . . .	3	8
biochemistry*		

\*Can be taken in combination with molecular biology or genetics.

Applicants are strongly encouraged to have completed their basic science requirements at the time of application. In addition, premedical students are advised to take advantage of the intellectual maturation afforded by a well-rounded liberal arts education. English, the humanities, and the social and behavioral sciences are considered particularly important. The following courses are also recommended but not required: cell biology, genetics, physical chemistry, vertebrate embryology, and Spanish.

3. **Candidates must attain satisfactory scores on the New Medical College Admission Test (MCAT).** An officially certified test score must be received by the College's Admissions Office before the candidate's application can be considered. Students applying to the 1997-98 entering class must have taken the MCAT no earlier than April 1994 and no later than August 1996. Inquiries regarding the MCAT should be addressed to:

**MCAT Program Office**  
P.O. Box 4056  
Iowa City, IO 52243  
(319) 337-1357

## MEDICAL STUDENT ADVISOR SYSTEM

The College's formal advisor system is divided into three groups: basic science advisors, clinical advisors, and career specialty advisors.

### Basic Science Advisors

Robert Steele, Ph.D., Chair (714) 824-7341

There are 12 basic science advisors. Six advisors are assigned on an every other year rotational basis to each incoming class and follow that class through their basic science years. The basic science advisors meet on a monthly basis to review students academic progress, and to initiate interventional programs for students in academic difficulty and at academic risk. They also serve as a source of support and guidance for first- and second-year medical students.

### Clinical Advisors

Deborah Stewart, M.D., Chair (714) 824-8358  
Associate Dean Student and Resident Affairs

There are 25 clinical advisors. They are divided into two groups on a rotating basis. One group is assigned primarily to first- and third-year students and the other group follows second- and fourth-year students. Each clinical advisor is teamed up with a basic science advisor and follows a cohort of students throughout the four years.



**Career Specialty Advisors**

Deborah Stewart, M.D., Chair (714) 824-8358  
Associate Dean Student and Resident Affairs

Career specialty advisors are generally full-time College of Medicine faculty who are identified as knowledgeable about career and residency options in their field. They are available as consultants to clinical advisors who want to assist advisees in making career choices, as well as directly to the students.

**Peer Review and Peer Counseling Program**

Deborah Stewart, M.D., Chair (714) 824-8358  
Associate Dean Student and Resident Affairs

The College of Medicine has an informal peer review process, aimed at early detection and assistance for medical students who are experiencing difficulty such as professional conduct problems, suspected impairment, violation of the honor code, or violation of any University policy, regulation, or rule. The Peer Review Committee is comprised of two representatives from each class, the student body co-presidents, and two advisory faculty members. The committee operates within guidelines set jointly by the College of Medicine administration and the student body. Cases involving serious professional misconduct are referred to the Dean's Office. The Peer Review Committee conducts hearings and may impose sanctions or provide assistance to the student.

The College is developing a Peer Counseling Program aimed at providing a confidential personal support system. It will allow students to seek assistance from peers in coping with the stress of balancing the demands of professional school and personal life. Peer counselors will receive initial and ongoing training and will serve as a "front-line" system, lending a helping hand and a listening ear to any student in need. However, students with ongoing problems and any major crises will be encouraged to seek professional help via existing campus and College of Medicine resources.

**Medical Scholars Program**

Marcia London Albert, Ph.D. (714) 824-3415  
Academic Skills Coordinator

This program is designed to facilitate a non-competitive and mutually supportive cooperative learning process which has a social, interactive component and a learning, course-based component. The program is offered to both the incoming medical school class and to second-year students. The second-year students are leaders for the first-year students; the fourth-year students mentor and teach the second-year students.

**MEDICAL SCIENTIST PROGRAM (M.D./Ph.D.)**

Alan Goldin, M.D., Ph.D., Chair (714) 824-5334

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 any of the graduate programs at UCI. 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) 824-5264.

Applicants for this program must submit a supplementary application to the Medical Scientist Program when they are submitting their secondary application information to the College of Medicine. The supplementary forms can be requested from the Office of Admissions, College of Medicine. Students accepted into the program will have the option of pursuing graduate study in any of the graduate programs at UCI. Although a specific graduate department need not be chosen at the time of admission, students will be expected to have selected a field for their graduate studies. Financial support in the

form of a fellowship, which includes a stipend as well as tuition and fees, will be provided to a limited number of students each year. Applicants not accepted into the Medical Scientist Program may be considered separately for admission to the College of Medicine.

**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 United States Medical Licensing Examination (USMLE) will be administered. In the third year there are seven weeks vacation; students may use that time for electives. In the fourth year up to 11 weeks of vacation are allowed.

Under the recommendation of faculty supported committees, UCI's M.D. program has undergone curricular reform within all four years of instruction. The College of Medicine faculty view curriculum development as a continual process and feel that medical education must be the highest priority and that teaching innovations must be encouraged and supported. The curriculum encourages medical students to become participants in their education process, facilitates active rather than passive learning, and encourages cooperative learning among students.

The faculty also feel that the curriculum should integrate basic and clinical sciences by bringing substantial clinical material into the early phases of medical education and bringing substantial basic science materials into the later phases of medical education (vertical integration of course material).

The College has achieved vertical integration of the curriculum with the development of the Patient-Doctor series. The Patient-Doctor courses are longitudinal multi-disciplinary experiences. Through Patient-Doctor I and II students begin clinical exposure during their first two years of instruction. During Patient-Doctor III and IV, students are given the opportunity to integrate basic and clinical science into a comprehensive forum and review major basic science topics through PCP conferences and patient workups. These courses also include special interest topics such as death and dying, cultural competence, domestic violence, and many others.

Horizontal integration of the course material has been achieved through the development of multi-disciplinary courses including the Patient-Doctor series and Neurosciences. In addition, the second-year course directors have coordinated the instruction of materials among Pathology, Clinical Pathology, Pharmacology, and Patient-Doctor II.

The faculty and administration at the College of Medicine are committed to the process of curricular reform and foresee continual implementation of new programs to ensure that medical students receive current and innovative education.

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 a passing grade and fulfill the National Board Examination requirement. After the second year, all students are required to take Step 1 of the United States Medical Licensing Examination before continuing their clinical clerkships. Students must also pass Step 2 of the Boards prior to graduation. In accordance with the College of Medicine policies and procedures, 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, as well as

information regarding registration, rules and regulations, grading procedures, and requirements for academic advancement, are contained in the *College of Medicine Handbook*, which is available from the Office of Medical Education and is distributed along with other policy statements to all students upon matriculation.

The College uses an Honors/Pass/Fail grading system for all students who entered after 1994.

## Curricular Description

### FIRST-YEAR CURRICULUM

No more than six hours of instruction are scheduled per day; of these six hours, no more than four are formal lectures. Course numbers are listed at the end of each description.

#### Gross Anatomy and Embryology

The structure of the human body is taught in Human Gross Anatomy and Embryology. Emphasis is placed on normal structure as it relates to function, with consideration of abnormal structures that may be revealed in a clinical setting. Gross Anatomy is taught through a regional approach, with an emphasis on laboratory dissections and demonstrations, augmented by lectures, radiographic films, discussions, and clinical correlate material. The course includes a detailed consideration of embryological aspects of human development. (*Medicine 500*)

#### Biochemistry and Advanced Biochemistry

Students may choose between two courses in biochemistry. The basic 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, the molecular mechanisms responsible for regulation at the transcriptional and translational levels, and molecular genetics. The advanced biochemistry 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 aspects of physiological chemistry, such as mechanisms of blood clotting. A clinical correlate is held each week and all students give a seminar presentation. (*Medicine 504 and 506*)

#### Histology

Histology is designed to provide students with knowledge of the cellular and subcellular bases of medicine. Emphasis is placed on normal structure as a basis for function, with consideration of abnormalities of structures in clinical cases. Lectures, laboratory tutorials, and independent study address how cells are formed, how cells are combined to form tissues, and how tissues are combined to form organs. (*Medicine 503A-B*)

#### Neurosciences

Understanding the structure and function of the nervous system is the goal of the two-part Neurosciences course. In Neurosciences I, the structure and function of the central and peripheral nervous systems are studied at the cellular level; Neurosciences II studies the central nervous system at the systems level. Lectures, laboratories, and clinical correlates are presented to provide students with an understanding of normal brain function, with additional consideration of clinical cases in small group discussions. Corequisite: Physiology. (*Medicine 502A-B*)

#### Medical Genetics

Medical Genetics reviews the basic principles of human genetics related to disease. In addition to the clinical and laboratory methods, students are introduced to the legal, ethical, and social aspects of diagnosis and treatment of genetic disease. Prerequisite: Biochemistry. (*Medicine 511*)

### Patient-Doctor I

Patient-Doctor I (PD-I) is a three-quarter sequential course during which students take physical histories from a variety of real and surrogate patients. Patients include homeless, aging, battered, and mentally-ill individuals, as well as patients with AIDS and language barriers. To improve the students' communication and interpersonal skills, students are videotaped and sent to various field locations. Students also participate in universal precautions, and skills laboratories and become CPR certified. (*Medicine 519A-B-C*)

### Introduction to Medical 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 cardiovascular, respiratory, renal, gastrointestinal, endocrine, exercise, and sexual physiology are presented. Prerequisite: Biochemistry. Corequisite: Neurosciences. (*Medicine 506A-B*)

### 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. Prerequisite: Biochemistry. (*Medicine 507A-B*)

### First and Second Years:

#### Basic Science and Preclinical Course Work

First Year	Hours	Second Year	Hours
Gross Anatomy and Embryology	178	Clinical Pathology	134
Biochemistry	136	Mechanisms of Disease	130
Histology	70	Pathology	172
Neurosciences	130	Pharmacology	140
Physiology	200	Patient-Doctor II	316
Microbiology	200		
Medical Genetics	35		
Patient-Doctor I	86		

### Third and Fourth Years:

#### Clinical Clerkships and Electives\*

Clerkship Rotations		Electives and Core Clerkships	
Third Year	Weeks	Fourth Year	Weeks
Pediatrics	8	Radiology	3
Obstetrics and Gynecology	9	Neurosciences	4
Psychiatry	8	Senior Subinternship	4
Junior Medicine	10	Surgical Selectives (2)	4
Surgery/Surgery Selective	10	Surgically Related Electives	3
Primary Care	5†	Medically Related Electives	4
Patient-Doctor III	1	Nondesignated Electives	7
		Musculoskeletal and Rehabilitation	4
		Patient-Doctor IV	1
		Intensive Care Unit	4

\* 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 CURRICULUM

No more than seven hours of instruction will be scheduled each day, and of these no more than four are formal lectures.

### Clinical Pathology

This course consists of lectures and laboratories covering the areas of hematology, blood bank, clinical chemistry, and microbiology. It provides students with a foundation for understanding the pathogenesis of a variety of disease states, as well as a foundation for the proper use of the laboratory for diagnosis and optimum patient management. Prerequisite: first-year curriculum. (*Medicine 509A-B*)

### Mechanisms of Disease

A clinical case approach is used to focus on diagnosis and pathophysiology of disease. Prerequisites: Pathology, Clinical Pathology, Pharmacology, and Patient-Doctor II. Prerequisite: first- and second-year curriculum. (*Medicine 515*)

### General and Systemic Pathology

This course deals with basic causes, mechanisms, and consequences of disease processes and with some applications of these considerations to clinical medicine. After an introduction to general types of disease processes, these processes are studied further as they affect specific organs and organ systems. Prerequisite: first-year curriculum. (*Medicine 508A-B*)

### Medical 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. Prerequisites: Biochemistry and Physiology. (*Medicine 517A-B*)

### Patient-Doctor II

Patient-Doctor II (PDII) is a year-long multidisciplinary course which integrates two physical examination courses, Examination of the Patient and Introduction to Clerkships with courses in Ethics, Nutrition, Human Sexuality, Preventive Medicine, Behavioral Science, and Toxicology, and material from geriatrics, genetics, medical economics, and cross-cultural medicine. PDII is based on a problem-oriented, small-group learning concepts and incorporates essential objectives from each of the courses listed above. Prerequisite: first-year curriculum. (*Medicine 519A-B-C*)

## THIRD-YEAR CURRICULUM

The third-year curriculum consists of six core rotations. For passage into the third year, students must successfully complete all first and second-year course work and take the USMLE Step 1 Examination. Third-year students may petition to enroll in fourth-year course work.

### Obstetrics and Gynecology Clerkship

During this clerkship, students are taught the scientific and clinical 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. (*Medicine 524*)

### General Surgery and Surgical Selective Clerkship

This clerkship provides students, as members of the surgical team, with an opportunity to study surgical patients in outpatient and hospital settings. Students acquire surgical knowledge, as well as develop skills in taking medical histories and conducting physical examinations. Emphasis is placed on the clinical evaluation, pathogenesis, diagnosis, and treatment of surgical diseases. Students spend six weeks on general surgery (three weeks each at UCI and LBVA Medical Centers).

The objective of the surgical subspecialties core is to provide an opportunity for students to expand their skills and knowledge in the surgical field. Students spend two, two-week blocks on orthopedics, otolaryngology, ophthalmology, plastic surgery, anesthesiology, or urology. Students are required to complete two additional two-week surgical selectives during their senior year which were not previously taken. (*Medicine 526*)

### Junior Medicine Clerkship

The clerkship occurs in a highly structured clinical environment. Students gradually assume responsibility for the care of patients, thereby enhancing their clinical, diagnostic, and procedural skills. Clinical vignettes and bedside teaching serve to round out the experience. (*Medicine 527*)

### Pediatrics Clerkship

This 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 adolescent medicine experiences also are included. The clerkship additionally 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. (*Medicine 528*)

### Psychiatry Clerkship

This eight-week clinical clerkship provides an opportunity for hands-on experience in the process of recognizing, diagnosing, and treating mental illness using the latest neuropharmacological advances in brain research as well as more traditional psychotherapeutic approaches. Each student participates fully in patient care, clinical teaching, and conferences. There are several choices of clinical settings for the rotation, including adult in-patient psychiatry, adolescent/child psychiatry, consultation psychiatry, geriatrics, and emergency room psychiatry. The sites include the UCI and LBVA Medical Centers where different patient populations are available. A required lecture series is presented on Wednesday afternoons at the UCI Medical Center. Students spend four weeks on each of two primary rotations with outpatient treatment and substance abuse experience as an integrated component. (*Medicine 529*)

### Primary Care Clerkship

This unique clerkship matches students with a primary care physician for the entire third year. Students attend 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. (*Medicine 597A-B-C-D-E*)

### Patient-Doctor III

The Patient-Doctor III course provides students with an orientation week which emphasizes preparation for the clinical experience, a core curriculum which is based in the Primary Care Clerkship, and coordination of the overall clinical curriculum experience. (*Medicine 520*)

## FOURTH-YEAR CURRICULUM

During the fourth year, students participate in core clerkships as well as electives. Students must complete the third-year curriculum prior to enrolling in the fourth-year curriculum unless a petition is filed and approved with the department and the Medical Education Office.

### Surgical Selective

The objective of the surgical subspecialty core is to provide an opportunity for students to expand their skills and knowledge in the surgical field. Students spend two, two-week blocks on orthopedics, otolaryngology, ophthalmology, plastic surgery, anesthesiology, or urology, which were not taken during the third year.

### Neuroscience Clerkship

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. (*Medicine 532*)

### Radiology Clerkship

Radiological sciences is taught throughout the four years of medical school: anatomy courses, first year; Mechanisms of Disease course, second year; radiology electives and rotations, third and fourth years; and a required clerkship in the fourth year. Daily clinical film conferences, didactic lectures, ACR file learning laboratory, and Radiology teaching file and slide and book materials are available teaching instruments in radiology. Radiology conferences interrelate general medicine, surgery, and radiology. Emphasis is given to correlate clinical findings and use of imaging modalities for problem-solving and diagnosis and treatment, including an understanding of the risk/cost/benefit ratio involved in daily clinical practice. (*Medicine 533*)

### Senior Subinternship

Students spend four weeks as subinterns during which time they carry the full ward responsibility of an intern on one-half the number of patients usually carried by an intern. The subinternship is designed to improve clerical competence and to prepare the students for the challenges and demands of the internship. Students may choose between subinternships in medicine, surgery, or pediatrics. (*Medicine 536, 537, 538, or 539*)

### Musculoskeletal and Rehabilitation

Students obtain outpatient experience in common musculoskeletal disorders and rehabilitation. This includes a three-hour weekly lecture series and clinic experience. The clinics involve physical medicine and rehabilitation, orthopedics, and rheumatology and focus on practical aspects of outpatient care of common disorders.

### Patient-Doctor IV Clerkship

The objectives of this course are to provide an opportunity for students to integrate basic and clinical sciences in a single, comprehensive forum; to provide an opportunity to review major, basic science topics; to provide students with an opportunity to challenge their clinical and diagnostic skills; to provide students in the basic science years with an opportunity to observe their more senior fellow students in action, to see that clinical skills, reasoning, and opportunities are in the foreseeable future; to provide a forum for bringing together basic and clinical faculty for a school-wide, educational/academic event. (*Medicine 535*)

## ELECTIVES

A total of 18 weeks in the medical curriculum are allotted for elective time. Seven 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, four weeks are devoted to medically related electives which may include pediatrics or family medicine, three weeks are devoted to surgically related electives which may include anesthesiology, obstetrics and gynecology, or ophthalmology. Four weeks are devoted to either a surgical or medical intensive care unit.

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 in the Science Library (on campus), and the UCI Medical Center Library.

All questions regarding the curriculum, electives, or matters of records should be directed to:

**Office of Medical Education**  
College of Medicine  
University of California, Irvine  
P.O. Box 4089  
Irvine, CA 92697-4089

General information/records: (714) 824-6138; electives: (714) 456-7515; curriculum: (714) 824-4609.

## Offices of Educational Affairs

Alberto Manetta, M.D., Senior Associate Dean (714) 824-6197

The Offices of Educational Affairs serve as the umbrella unit for all support services provided at the College of Medicine. Within the Offices of Educational Affairs are two main departments: Medical Education and Student Affairs. Within these departments are the divisions of Medical Admissions, Medical Education, Student Affairs, Graduate and Extramural Education, and a satellite Financial Aid Office. The Senior Associate Dean is responsible for the overall management and functions of these departments including budgeting, personnel, space, long-range planning, development, and program evaluation.

### Student Affairs

Deborah Stewart, M.D., Associate Dean (714) 824-8358  
Marianne Ross, Ph.D., Counseling Psychologist (714) 824-5932  
Marcia Albert, Ph.D., Academic Skills Specialist (714) 824-3415

Offices of Student Affairs consists of Admissions and Outreach, Financial Aid, Counseling Psychologist, and Academic Skills Specialists. One of the primary goals of these offices 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. Support services available through Student Affairs are: workshops on stress management, interpersonal relationships, and assertiveness; career counseling; summer programs; training in communication skills and counseling techniques; academic monitoring; coordination of the faculty advisor program; assistance for students with special needs; and development of student programs such as a wellness curriculum, substance abuse awareness, and sexual harassment awareness.

### Admissions and Outreach

Ralph Purdy, Ph.D., Assistant Dean (714) 824-5388  
 E. Leah Parker, Director (714) 824-5388  
 Outreach Counselors (714) 824-4603

Among its primary functions the Office of Admissions and Outreach processes applications for admission; provides administrative support to the Dean's Admissions Committee; counsels prospective, current, and non-accepted applicants; and coordinates interview events and campus tours.

This office has a number of outreach-related functions including: community education (supporting local high school and college campuses in their science-related efforts and providing information concerning health care programs, health-related issues, and career opportunities); coordination of non-curricular educational programs and raising scholarship monies; serves as the focus for medical student organizations, coordinating their activities with the needs of the community; responsible for summer programs (Pre-entry, Pre-medical); and interacts with various local colleges and high schools and assists with scholarship related activities. For more information on these programs refer to the College of Medicine Support Programs section.

### Financial Aid

James Miles, Assistant Director (714) 824-6476

UCI College of Medicine Financial Aid Office provides financial assistance and financial counseling services to entering and continuing medical students. The office secures, manages, and provides funds in the form of scholarships, grants, and loans to assist in meeting students' educational expenses.

The office coordinates financial aid application materials; reviews and evaluates information provided by applicants; tracks documents needed to complete an application; awards financial aid programs; and conducts research to determine basic educational expense budgets. It also provides students with information on policies and procedures, cost of attendance, and eligibility criteria.

In providing counseling services, the office advises students, reviews their individual circumstances, and provides financial assistance within financial aid program guidelines. It presents financial aid workshops for prospective and enrolled students to enhance their knowledge about financial aid programs and the application process. Also, it conducts entrance/exit interviews and provides debt management counseling.

### Medical Education

Alberto Manetta, M.D., Associate Dean (714) 824-6197  
 Lloyd Rucker, M.D., Assistant Dean, UCIMC (714) 456-5176  
 Robert Wesley, M.D., Assistant Dean, LBVAMC (310) 494-5486  
 Robin Kirchoff, Director (714) 824-4609

This office provides support related to curricular issues for departments, faculty, and students; serves as facilitators of new programs and curriculums and supports working committees during curriculum development; oversees calendar issues; maintains records on course materials and grading policies; provides support for the Committee on Educational Policies; oversees student registration and enrollment, student grade reporting, and transcripts; provides assistance to medical student organizations; serves as liaison with main campus organizations, student health insurance, and health clearance issues.

### Learning Resource Center

Kenneth Longmuir, Ph.D., (714) 824-7781  
 Assistant Dean Education and Curricular Resources

This office assists students in meeting their academic goals through the acquisition and integration of learning tools such as computer-aided instruction and curriculum data base and provides state-of-the art computer work stations designed to utilize the

newest teaching technology such as video disk, patient simulation software, and USMLE preparation software. Students are also exposed to electronic communication and electronic searches and can obtain information on improving their study skills, reducing test anxiety, time management, study plan organization, critical reading and reasoning, and test preparation and endurance.

### Continuing Medical Education

Kirk A. Keegan, Jr., M.D., Assistant Dean (714) 824-4220  
 Nancy Koehring, Director (714) 824-6039  
 Postgraduate and Community Programs

The primary goal of the Continuing Medical Education program is to provide multi-disciplinary educational offerings which improve the quality of health care delivery. This is attained by providing continuing medical education through careful needs assessment and in-depth evaluation, resulting in programs which promote reinforcement of basic knowledge, acquisition of new skills, and the dissemination of current medical advances and research.

### Graduate Medical Education

Rosalind Dietrich, M.D. (714) 456-5033  
 Nancy Koehring, Director (714) 824-6039  
 Postgraduate and Community Programs

The UCI College of Medicine Graduate Medical Education Training Programs attract medical students from prestigious medical schools nationwide. UCI offers 23 ACGME-approved residency training programs and ACGME-approved fellowship training programs in eight of the disciplines. There are approximately 650 residents and fellows in these training programs. UCI Medical Center, the Veteran's Affairs Medical Center, Long Beach and Long Beach Memorial Medical Center are the integrated training sites for the residency programs. Other affiliations such as Kaiser Anaheim, Kaiser Riverside, Western Medical Center, City of Hope, Children's Hospital Los Angeles, Rancho Los Amigos, and FHP offer residents training in specialized fields.

### College of Medicine Support Programs

The Office of Admissions and Outreach is designed to meet the challenges of California's changing demographics and to contribute to the College's goal of achieving a broad spectrum of diversity in the student population, and ultimately, in the medical profession. This office is responsible for the recruitment and success of targeted socioeconomically disadvantaged students who have the potential of service to the medically underserved communities in California. To reach this goal, Admissions and Outreach directs the following programs: Summer Premedical and Pre-Entry Programs, Minority Premedical Conferences, Reapplicant Conference, support to medical student organizations, academic counseling, study skills workshops, liaison with general campus support services, and recruitment workshops at other colleges and universities.

In addition to providing general services to all students, Educational Affairs is responsive to the unique concerns of socioeconomically disadvantaged and nontraditional students. Such services include the following programs.

The **Summer Pre-Entry Program** introduces newly accepted socioeconomically disadvantaged students to the type and volume of study materials they will encounter in medical school. The rigorous, highly scheduled, six-week summer program is designed to prepare and orient entering students to the medical school curriculum, which begins in September, and is intended to help students adapt to the professional school setting, meet new classmates and faculty, become acquainted with the surrounding communities, and find living accommodations. On-campus housing during the regular academic year is provided to students who qualify according to the Federal Health Careers Opportunity Program guidelines.

The **Summer Premedical Program** seeks to increase the number of socioeconomically 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. Participants take course work in basic sciences, conduct clinical work, and are exposed to the application process for medical school admission. The program is conducted on the UCI campus from early July to mid-August. Participants are provided with housing paid by a grant from the Federal Health Careers Opportunity Program. Undergraduate students entering their second year of college are encouraged to apply. Individuals who show a commitment to practicing in medically underserved areas are given highest priority.

## POSTGRADUATE EDUCATIONAL PROGRAMS

### Residency Programs

The College of Medicine and its affiliated hospitals offer more than 650 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, radiation oncology, 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 radiation oncology 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, and helicopter/paramedic base station, 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 pre-hospital 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 by the American Medical Association's Council on Medical Education and Hospitals.

The resident positions are divided into a traditional three-year track with special emphasis on primary care and a preliminary tract.

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.

### 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, for a total of 28 resident positions.

## 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.

## OTOLARYNGOLOGY—HEAD AND NECK SURGERY

The Department of Otolaryngology—Head and Neck Surgery offers a four-year residency program providing extensive clinical experience in conjunction with an academic approach to resident research projects. One year of general surgery training is required. The four-year program provides a breadth of training in otological surgery, head and neck surgery, facial plastic surgery, and nasal and paranasal sinus surgery. Residents receive an extensive clinical experience at UCI Medical Center, Veteran's Affairs Medical Center—Long Beach, Kaiser Foundation Hospital—Anaheim.

This training is targeted to be of the caliber necessary for young surgeons to embark upon an academic career. This training is excellent for those going into private practice as well.

## 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 two major teaching hospitals—the UCI Medical Center and the Miller Children's Hospital (located at Memorial Hospital Medical Center, Long Beach). 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.

## PHYSICAL MEDICINE AND REHABILITATION

The Department of Physical Medicine and Rehabilitation offers a three-year residency for applicants who have completed a one year internship. The focus 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, VAM-CLB, 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 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.

### **RADIATION ONCOLOGY**

The Residency Training Program in Radiation Oncology is designed to prepare suitably qualified applicants for academic and clinical practice careers in radiation oncology. Candidates enter a four-year program which includes clinical experience, didactic lectures, and integrated research experience. Unique opportunities exist for training in the use of interstitial and intracavitary treatment using radionuclides and specially designed applicators. An elective rotation may be taken 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 four participating hospitals: UCI Medical Center, VAMCLB, MHMC, and City of Hope National Medical Center.

### **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 VAMCLB. 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, 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 Genetic Counseling.

Application materials may be obtained by writing to the individual graduate programs or the:

**Office of Research and Graduate Studies**  
**120 Administration Building**  
**University of California**  
**Irvine, CA 92697-3175**  
**(714) 824-7295**

### **Anatomy and Neurobiology**

364 Medical Surge II; (714) 824-6050  
 Richard T. Robertson, **Department Chair**

#### **Faculty**

Tallie Baram: Developmental neurobiology of seizures; CNS mechanisms of stress response  
 Robert H. Blanks: Vestibular physiology and anatomy  
 Anne Calof: Developmental neurobiology; molecular mechanisms of neurogenesis and programmed cell death  
 James H. Fallon: Neuronal growth factors and neurotransmitter interactions  
 Christine M. Gall, *Department Vice Chair*: Regulation of neuronal gene expression; neurotrophic factors  
 Roland A. Giolli: Experimental neuroanatomy; visual system  
 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 system physiology and development  
 W. Ian Lipkin: Molecular biology of neurotropic viruses; Borna disease virus  
 Sandra E. Loughlin: Developmental neurobiology of neurotransmitter systems; Parkinson's disease  
 Diane K. O'Dowd: Regulation of neuronal excitability; development of functional synaptic connections  
 Charles E. Ribak: Neurocytology; neurotransmitters; neuronal circuitry  
 Richard T. Robertson: Developmental neurobiology; forebrain development  
 Martin A. Smith: Cellular and molecular mechanisms of synapse formation  
 Ivan Soltesz: Molecular and cellular neurobiology  
 John E. Swett: Peripheral nervous system, spinal cord, pain mechanisms  
 John H. Weiss: Mechanisms of neural degeneration

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 molecular neurobiology, mechanisms of neural development, ion channel physiology, experimental neuroanatomy, cellular neurobiology, and structure and function of sensory and motor systems. The Department maintains research facilities to provide the student with experience in a variety of techniques including: electron microscopy; immunocytochemistry; molecular neurobiology; neuroanatomical tracing; single-unit neurophysiology; tissue culture methodology; laser confocal microscopy; and computer analysis of 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 and fundamentally important research. The second goal is to gain the knowledge and ability to teach graduate, undergraduate, and professional courses in the neurosciences.

These two goals are achieved through a basic and extended academic program that is tailored to the individual needs of the student.

The new combined neurosciences graduate core curriculum is designed to provide all students with a fundamental knowledge of modern neurobiology, with an emphasis on molecular, morphological, and physiological approaches. In the first year, students are required to take selected courses in neuroanatomy, neurophysiology, cell and molecular neurobiology, and developmental neurobiology. In the second year, students select from a variety of courses including neural systems, neurochemistry, and pharmacology. Over the usual four-year training period the student is required to complete a practical course in statistics, selected seminar courses, at least two laboratory rotations, and a total of 50 credit hours of research. 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 a teaching 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 year. By the end of the first year the student and the Graduate Committee select a faculty sponsor who will supervise the dissertation research. A two-part Qualifying Examination is given to the student by a Candidacy Committee no later than the end of the fall quarter of the third year. 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 and a dissertation proposal.

The dissertation research topic 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 to five years to complete.

Course descriptions may be found in the School of Biological Sciences section.

## Biological Chemistry

Building D, Room 240, Medical Sciences I; (714) 824-6051  
Stuart M. Arfin, **Department Chair (Acting)**

### Faculty

Stuart M. Arfin: Protein processing and turnover; functions of ubiquitin

Ralph A. Bradshaw: Growth factor action; signal transduction; protein processing

Chris L. Greer: RNA processing and nuclear export; tRNA gene expression

Haoping Liu: MAP kinase signal transduction; dimorphic regulation in yeast

Calvin S. McLaughlin: Macromolecule biosynthesis; control of cell division

Masayasu Nomura: RNA polymerase I; nuclear transport and function

Robert E. Steele: Molecular biology of *Hydra* development

Faculty research interests in the Department of Biological Chemistry focus on the regulation of gene expression, (RNA splicing, mammalian chromosomal organization, and nucleic acid-protein interactions), the regulation of cellular processes (membrane-hormone interactions, regulation of protein synthesis, molecular genetics of metabolic processes, and intracellular protein localization), and the molecular basis of development. Students are exposed to technical expertise in all facets of current research in molecular biochemistry from protein chemistry to genetic engineering.

The Department offers graduate study under the auspices of the School of Biological Sciences and in conjunction with the program in Molecular Biology, Genetics, and Biochemistry, which is described in a previous section. Students admitted into the combined program who select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their third year. Students are required to attend and participate in the departmental Journal Club and are required to attend departmental seminars. In addition, students are required to complete two advanced-level graduate courses subsequent to entering the Department's Ph.D. concentration. In the third year, students take the advancement-to-candidacy examination for the Ph.D. degree by presenting and defending a proposal for specific dissertation research. Completion of the Ph.D. normally requires five years of graduate study.

Course descriptions may be found in the School of Biological Sciences section.

Several faculty within the Department also are members of the graduate program in Protein Engineering, which is described in the School of Biological Sciences section.

## Environmental Toxicology

367C Medical Surge II; (714) 824-4769

Daniel B. Menzel, **Department Chair**

Ronald C. Shank, **Graduate Program Director**

### Faculty

Dean B. Baker: Environmental medicine and clinical toxicology; epidemiology; clinical effects of heavy metals, pesticides, and hazardous waste

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

Byung H. (Ben) Choi: Mechanisms in chemical pathology; toxicology of heavy metals in the central nervous system

Yutaka Kikkawa: Pulmonary free radical biology; cytochrome P-450 enzyme system; relationship to toxicity of environmental pollutants, oxygen toxicity and ARDS; evaluation of sexual differentiation after neonatal insults with xenobiotics and hyperoxia

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.

Daniel B. Menzel: Toxicokinetics and mechanisms of carcinogenesis;

biochemical toxicology

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.

Boctor Said: DNA modification by successive exposure to multiple carcinogens; gene cloning to produce a protein to serve as a biomarker for cervical and breast cancer

Ronald C. Shank: 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, chemical pathology, photo toxicity, toxicology of natural products, 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 interaction throughout the program. An important and integral part of the learning process is an early and intensive involvement of the student in ongoing original research projects in environmental toxicology, especially inhalation/pulmonary toxicology, chemical carcinogenesis, biochemical toxicology, chemical pathology, and neurotoxicology.

In addition to meeting the general admission requirements set by the 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; 12 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 206, 207, 298, and 299; Physiology and Biophysics 206A-B; Anatomy 203A-B; and 16 units from an approved pool of courses. This pool consists of: Environmental Toxicology 201, 202, 204, 205, 212, 213, 230; Molecular Biology and Biochemistry 203 and 204; and Developmental and Cell Biology 231B. The core requirements for the Master's degree include Environmental Toxicology 206, 207, 298, and 299; Physiology and Biophysics 206A-B; and eight units from the approved pool of

courses. In addition, for either program, competence in 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, chemical pathology, 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 (4) F, odd years.** Problem solving to demonstrate principles of toxicology; quantitative dose-response relationship; toxicant-target (receptor) interaction emphasizing interspecies differences in Ah receptor and dioxins; complete *in vivo* metabolism of xenobiotics by mammalian systems; integration of organ responses to toxic agents. Prerequisites: Toxicology 206; Molecular Biology and Biochemistry 204; Physiology 206A-B.

**202 Environmental Toxicology (4) W, even years.** Analysis of real problems involving toxic chemicals and the human food, air, and water supplies, occupational exposures, and life styles. Formal problems will be considered by small groups of students and discussed by the class. Prerequisite: Toxicology 201.

**204 Neurotoxicology (4) F, even years.** The effects of various harmful chemicals upon nervous system function. Emphasis given to the molecular events underlying neurological damage and to the relation of such processes to basic mechanisms of neurobiology.

**205 Toxins and Cellular Injury (4) W, odd years.** 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.

**206 Target Organ Toxicity (6) F.** Analysis of the responses occurring in individual organs of man and animals exposed to environmental chemicals at toxic levels; distinctive structural and functional features of ten organ systems are presented in terms of phenomena, mechanisms of action, and methods of study.

**207 Experimental Design and Interpretation of Toxicology Studies (2) W.** Introduction to methods of structuring toxicology experiments and analyzing data including experimental design, data distributions, sample sizes, hypothesis testing, linear regression, analysis of variance, multiple comparison testing, and non-parametric tests.

**212 Inhalation Toxicology (4) S, odd years.** The principles and practice of laboratory inhalation toxicology. Topics include aerosols, gases, respiratory tract structure and function, lung defenses, aerosol deposition exposure techniques, characterization of exposure atmospheres, experimental designs, animal models, and regulations and guidelines.

**213 Respiratory Physiology and Toxicology (4) S, odd years.** Critical review of pulmonary physiology and toxicology with emphasis on mechanisms of toxicology, pulmonary toxicokinetics of gases and particles, lung mechanics, structure-function aspects of lung injury and exercise physiology.

**230 Chemical Mutagenesis and Carcinogenesis (3) F.** Molecular mechanisms in carcinogenesis; structure-activity relationships; DNA repair; multi-stage models; proto-oncogenes and oncogenes; experimental bases for mechanisms; mutagenicity and carcinogenicity testing. Prerequisites: graduate standing, Environmental Toxicology 201, and Molecular Biology and Biochemistry 203.

**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.

## Genetic Counseling

Building 27, Route 81, UCI Medical Center; (714) 456-5789

Maureen Bocian, **Division Chief**

Ann P. Walker, **Graduate Program Director**

### Faculty

Maureen Bocian: Heterogeneity and variability in genetic syndromes; new syndrome identification; skeletal dysplasias; neurofibromatosis

John Jay Gargus: Genetic metabolic diseases; molecular genetics of cell membrane disorders

Rick Martin: Dysmorphology, fetal alcohol syndrome; cleft lip

Denise Simonsen: 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

M. Anne Spence: Population and quantitative genetics; linkage and mapping

Kathryn Steinhaus: Prenatal genetic diagnosis

Ann P. Walker: Genetic counseling; delivery of genetic services; computer uses in clinical genetics; genetics education; cancer genetics

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 Genetic 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 and quantitative methods; 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 Genetic Counseling certification 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 by late April.

## GRADUATE COURSES IN GENETIC 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. Genetic Counseling 200B and 200F may not both be taken for credit.

**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.

**200F Quantitative Genetics (2) W.** Quantitative aspects of human genetics, including population studies, segregations analysis, and genetic risk determination. Prerequisite: 200A or consent of instructor. Genetic Counseling 200F and 200B may not both be taken for credit.

**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 Genetic Counseling students.

**201A Introduction to Genetic Counseling (2) 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. Corequisite: Genetic Counseling 202A. Open only to Genetic 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 Genetic 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 Genetic 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 Genetic 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 practiced in class. Open only to Genetic Counseling students.

**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 only to Genetic Counseling students.

**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.

**203 Child Development for Genetic Counselors (4) S (alternate years).** Overview of normative human development from conception through adolescence. Impact of genetic disease and/or developmental disability at various stages of cognitive, perceptual, motoric, social, and emotional development. Family dynamics and issues of separation/individuation, sexual identity formation, and teen pregnancy issues. Open only to Genetic Counseling students. Formerly Genetics 203A and 203B.

**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 only to Genetic Counseling students.

**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

Building B, Room 240, Medical Sciences I; (714) 824-5261  
Dennis D. Cunningham, **Department Chair**

### Faculty

Dennis D. Cunningham: Proteases and protease nexins: regulation of neural cells  
Alan L. Goldin: Molecular analysis of ion channel function  
Sidney H. Golub: Cellular immunity and tumor biology  
George A. Gutman: Potassium channel and immunoglobulin super-family genes

G. Wesley Hatfield: Effects of DNA topology on transcription  
Suzanne B. Sandmeyer: Molecular genetics of a position-specific yeast retrovirus-like element  
Rozanne M. Sandri-Goldin: Regulatory functions of a post-transcriptionally acting herpes virus protein  
Michael E. Selsted: Host defense systems in phagocytic leukocytes and mucosal epithelium  
Bert L. Semler: Replication of picornavirus RNAs; RNA-protein and protein-protein interactions  
Eric J. Stanbridge: Tumor suppressor genes and oncogenes in human cancer  
Donald F. Summers: Molecular biology of hepatitis A virus replication  
Marian L. Waterman: Regulation of transcription in human T lymphocytes

The Department of Microbiology and Molecular Genetics provides advanced training to individuals interested in the regulation of gene expression and the structural and functional properties of proteins encoded by these genes. The research interests of the Department focus on the molecular biology and genetics of viruses, bacteria, and yeast; the fundamentals of the immune response; the molecular biology of cultured animal cells; the genetic basis of cancer; and the genetics and physiology of infectious agents.

The Department offers graduate study under the auspices of the School of Biological Sciences and in conjunction with the program in Molecular Biology, Genetics, and Biochemistry, which is described in a previous section. Students admitted into the combined program who select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their third year.

Participation in the Department's seminar series and completion of at least one advanced topics course per year for three years are expected of all students. In their third year, students take the advancement-to-candidacy examination for the Ph.D. degree by presenting and defending a proposal for specific dissertation research. Completion of the Ph.D. normally requires five years of graduate study.

Course descriptions may be found in the School of Biological Sciences section.

## Pharmacology and Toxicology

360 Medical Surge II; (714) 824-6771  
Larry Stein, **Department Chair**  
Frances M. Leslie, **Graduate Program Director**

### Faculty

Stephen C. Bondy: Mechanisms of neural regenerative responses to neurological insults  
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  
Kelvin W. Gee: Pharmacology of allosteric modulators of the GABA<sub>A</sub> receptor  
Diana N. Krause: Cerebrovascular and neurotransmitter pharmacology; regulation of the blood-brain barrier  
Frances M. Leslie: Effects of drugs of abuse on central nervous system development  
Ellis R. Levin: Neuroendocrinology and neurobiology of hypothalamic peptides; molecular biology of atrial natriuretic peptides and their receptors  
Sandra E. Loughlin-Burkhead: Development and plasticity of monoamine and peptide systems in mammalian brain; role of growth factors  
Ralph E. Purdy: Vascular neurotransmitter receptors, second messengers and signal transduction  
Larry Stein: Neurochemistry of reward, punishment, and long-term memory  
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.

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, 256, and 257, 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 complete the 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) W.** Lecture, three hours. Seminar, three hours. Evolution of the receptor concept, analysis of receptor properties by bioassay methodology, receptor binding studies, solubilization and purification of receptors, electrophysiological analysis of receptor channels, and cell biology of receptors.

**253 Pharmacology of the Cardiovascular System (4) S.** 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) S.** 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.

**256 Experimental Design for Pharmacologists (1) F, W, S.** Lecture, one hour; discussion, one hour; laboratory, one hour. Population and sample statistics, hypothesis testing, analysis of variance, nonparametric statistics, experimental design, power, and the use of statistical computer software. Prerequisite: Pharmacology 252 or consent of instructor.

**257 Ethics in Research (1) F, W, S.** Lecture, one hour; discussion, one hour. Ethical conduct in research including data handling, authorship, conflict of interest, animal rights, handling of misconduct. Prerequisite: Pharmacology 299 or consent of instructor. Satisfactory/Unsatisfactory grading only. May be taken for credit two times.

**298 Seminar (2) F, W, S.** Presentation and discussion of current problems and methods in teaching and research in pharmacology, toxicology, and therapeutics.

**299 Research (1 to 12) F, W, S**

## Department of Physiology and Biophysics

Building D, Room 340, Medical Sciences I; (714) 824-5863  
Janos K. Lanyi, **Department Chair**

### Faculty

Nancy L. Allbritton: Signal transduction by second messengers and protein kinases  
Kenneth M. Baldwin: Activity and hormonal factors regulating striated muscle plasticity  
Michael D. Cahalan: Ion channels in the nervous and immune systems  
K. George Chandy: Molecular biology and structure of ion channels; novel therapeutic agents  
J. Jay Gargus: Molecular analysis of membrane signaling proteins  
Alan L. Goldin: Molecular analysis of ion channel function  
George A. Gutman: Potassium channel and immunoglobulin super-family genes  
Harry T. Haigler: Growth factor signal transduction; annexin calcium-binding proteins  
James E. Hall: Biophysics of membrane channels  
Janos K. Lanyi: Structure and function in bacterial rhodopsins  
Kenneth J. Longmuir: Lipid metabolism; liposomes; membrane fusion  
Thomas L. Poulos: Protein engineering and crystallography  
Hamid M. Said: Cellular and molecular aspects of intestinal transport of vitamins  
Ivan Soltesz: Function and modulation of synaptic GABA<sub>A</sub> receptors  
Bruce J. Tromberg: Optical spectroscopy in cells and tissues  
Larry E. Vickery: Metalloproteins; steroid hormone biosynthesis and receptors; molecular chaperones  
Stephen H. White: Protein folding in membranes

The Department of Physiology and Biophysics offers research opportunities in the molecular biophysics of membranes and proteins, ion channels and signal transduction, endocrinology, molecular and cell biology, developmental neurobiology, and exercise physiology.

The Department offers graduate study under the auspices of the School of Biological Sciences and in conjunction with the program in Molecular Biology, Genetics, and Biochemistry, which is described in a previous section. Students admitted into the combined program who select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their third year.

The faculty conducts quarterly reviews of all continuing students to ensure that they are maintaining satisfactory progress within their particular academic program. Students participate in a literature review course designed to strengthen research techniques and presentation skills and attend the weekly Department colloquium. During the third year, each student presents a seminar on a topic assigned by the formal candidacy committee. Following the seminar, the committee examines the student's qualifications for the successful conduct of doctoral dissertation research. Each student must submit a written dissertation on an original research project and successfully defend this dissertation in an oral examination. Interdisciplinary dissertation research involving more than one faculty member is encouraged. Students who have met all necessary prerequisites should be able to complete the Ph.D. in five years.

Information on course descriptions may be found in the School of Biological Sciences section.

Several faculty within the Department also are members of the graduate program in Protein Engineering, which is described in the School of Biological Sciences section.

## Radiological Sciences

140B Medical Sciences I; (714) 824-5904

Jeffrey C. Brandon, **Department Chair (Acting)**

Sabee Molloy, **Graduate Program Director**

### Faculty

A. Madjid Aissi: Internal dosimetry, including computer modeling of human phantoms; development of quality assurance instrumentation for radiation therapy

Anne-Line Anderson: Development of radiopharmaceuticals; quantitative structure-activity relationships

Zang-Hee Cho: Multidimensional imaging; NMR tomography, and positron emission tomography

Fred Greensite: Magnetic Resonance Imaging; quantitative electrocardiography

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; acoustical microscopy

Heung Lee: Physics of NMR spectroscopy and imaging, digital signal processing, medical instrumentation

Sabee Molloy: Digital radiography; application of digital subtraction angiography to cardiac imaging; digital image processing; coronary artery flow measurement

Orhan Nalciglu: Imaging physics with specific applications to digital radiography, CT, NMR tomography, and magnetic resonance spectroscopy

J. Leslie Redpath: Cellular and tissue radiobiology including mechanisms of chemical modification of radiation damage; oncogenic cell transformation; genetic aspects of cellular sensitivity

Werner Roock: Engineering aspects of radiographic imaging systems; digital radiography; x-ray tube design

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 medical imaging.

Medical imaging involves the study of the interaction of all forms of radiation with tissue and the development of appropriate technology to extract clinically useful information from this interaction process. Such information is most often displayed in an image format. Medical images can be as simple as a projection image as first produced by Roentgen nearly 100 years ago and utilized today as a simple chest x-ray, or as complicated as a computer reconstructed image, as produced by Computerized Tomography (CT) using x-rays, or by Magnetic Resonance Imaging (MRI) using intense magnetic fields. Medical imaging is an exciting and rapidly devel-

oping area of research which is continuing to revolutionize diagnostic medicine. It provides students with the rare opportunity to conduct research which will directly, and sometimes immediately, benefit humankind.

The graduate program is based on a broad-based, interdisciplinary curriculum which places heavy emphasis on research and is designed to provide the student with a comprehensive and integrated knowledge of medical imaging in addition to an exceptionally high level of competence in one or more subspecialties. By utilizing the training received in medical imaging and its various modalities, as well as in 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 should be aware that the program is 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 physics, radiopharmacy, and radiological engineering located on campus and at the hospitals associated with UCI. Prospective students with particular or well-defined research interests are encouraged to contact faculty members to discuss research opportunities.

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. Details of the application process and information about financial support and university housing are described in the booklet *Graduate Application for Admission* which is available from the Department or from the Office of Graduate Studies. This booklet also contains the appropriate application forms which must be completed by the prospective student.

The application deadline for fall quarter admission for graduate study in Radiological Sciences is June 1 of the same year. However, to receive full consideration for financial assistance, fall quarter applications should be completed by February 1. Applications for the winter and spring quarters will be accepted only under special circumstances. In addition to the usual University fellowships, the Department of Radiological Sciences offers a limited number of departmental fellowships for which entering students can be considered. Since the Department does not offer an undergraduate program of study, no teaching assistantships are available through the Department. Research assistantships may be available to advanced students.

Applicants to the program should have a strong background in physics and mathematics. Some course work in the biological sciences would also be helpful, particularly an introductory course in physiology and/or anatomy. Since most students will need some additional work in one or more disciplines, the program allows for the correction of minor deficiencies during the first year, as determined by Departmental review. Although the program of study is vigorous, it is also sufficiently flexible to allow for a wide range of interests and objectives.

Students currently in the program generally have undergraduate degrees in either physics or electrical engineering. The UCI bachelor's degree program in physics with a concentration in biomedical physics is an ideal prerequisite for graduate study in Radiological Sciences.

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 the oral and written comprehensive examinations at the M.S. level.

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 a grade of B or above. Second, the student must pass a written qualifying examination given at the end of the first full year of study. This examination, normally given in September before the beginning of the fall quarter, consists of five parts: radiation physics, x-ray (including CT), nuclear medicine, magnetic resonance imaging, and ultrasound. A student who fails the qualifying examination may repeat it at a later regularly scheduled time. Only one such repeat examination is allowed. Third, within a year after passing the qualifying examination, the student must present a detailed dissertation research proposal to a five-person candidacy committee appointed by the Dean, upon the recommendation of the graduate committee, proposed by the student and the student's advisor. Following the unanimous approval of the candidacy committee, the student will be advanced to candidacy. The attainment of candidacy status signifies that all preparatory work has been completed and that full attention may be given to the dissertation research. Finally, the student must prepare and defend, in a final oral examination a dissertation representing original research in the student's principal field of study. 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. The doctoral committee is a three-member subset of the candidacy committee and is chaired by the faculty member responsible for providing primary guidance of the student's dissertation. The doctoral committee supervises the student's research program, approves the dissertation, and conducts the final oral examination.

Additional information on the graduate program in Radiological Sciences is available from the Director of Graduate Studies, Department of Radiological Sciences, University of California, Irvine, CA 92697-5000; telephone (714) 824-5904.

## 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-D Principles of Medical Imaging (4-4-4-4) 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-D Laboratory in Medical Imaging (2-2-2-2) 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.



# APPENDIX

## 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: Gray Davis

Speaker of the Assembly: Curt Pringle

State Superintendent of Public Instruction: Delaine Eastin

President of the Alumni Associations of the University of California:

Pat Kessler

Vice President of the Alumni Associations of the University of California:

Richard Russell

President of the University: Richard C. Atkinson

#### Appointed Regents <sup>1</sup>

William T. Bagley (2002)

Roy T. Brophy (1998)

Clair W. Burgener (2000)

Frank W. Clark, Jr. (2000)

Ward Connerly (2005)

John Davies (2004)

Tirso del Junco, M.D. (1997)

Alice J. Gonzales (1998)

S. Sue Johnson (2002)

Meredith Khachigian (2001)

Leo J. Kolligian (1997)

Howard H. Leach (2001)

David S. Lee (2006)

Velma Montoya (2005)

S. Stephen Nakashima (2004)

Tom Sayles (2006)

Jess Bravin (7/1/96-6/30/97)

#### Regents-Designate <sup>2</sup>

Judith Willick Levin

Charles J. Soderquist

<sup>1</sup> Regents, except ex-officio Regents and the student Regent, are appointed by the Governor to 12-year terms commencing on March 1. Ex-officio Regents serve by virtue of their elected or appointed positions; the student Regent is appointed by the Regents to a one-year term commencing on July 1.

<sup>2</sup> One-year terms expiring June 30.

#### Faculty Representatives to The Regents

Chair: Arnold L. Leiman (9/1/95-8/31/96)

Vice Chair: Duncan Mellichamp (9/1/95-8/31/96)

#### Principal Officers of The Regents

General Counsel: James E. Holst

Treasurer: Patricia Small

Secretary: Leigh Trivette

#### OFFICE OF THE PRESIDENT

President of the University: Richard C. Atkinson

Provost and Senior Vice President-Academic Affairs: C. Judson King

Senior Vice President-Business and Finance: V. Wayne Kennedy

Vice President-University and External Relations: William B. Baker

Vice President-Health Affairs: Cornelius L. Hopper

Vice President-Agriculture and Natural Resources: W. R. Gomes

Vice President-Clinical Services Development: William H. Gurtner

Special Assistant to the President: Janet E. Young

## CHANCELLORS

Chancellor at Berkeley: Chang-Lin Tien

Chancellor at Davis: Larry N. Vanderhoef

Chancellor at Irvine: Laurel L. Wilkening

Chancellor at Los Angeles: Charles E. Young

Chancellor at Riverside: Raymond L. Orbach

Chancellor at San Diego: Robert C. Dynes

Chancellor at San Francisco: Joseph B. Martin

Chancellor at Santa Barbara: Henry T. Yang

Chancellor at Santa Cruz: M. R. C. Greenwood

## UCI OFFICERS

### Chancellor

Laurel L. Wilkening

### Executive Vice Chancellor

Sidney H. Golub

### Vice Chancellor Administrative and Business Services

Wendell Brase

### Vice Chancellor Research and Dean of Graduate Studies

Frederic Yui-Ming Wan

### Vice Chancellor Student Services

Manuel N. Gómez

### Vice Chancellor University Advancement

Jerry E. Mandel

### Executive Director of the Medical Center

Mark R. Laret

## UCI DEANS AND CHAIRS OF INDEPENDENT ACADEMIC UNITS

### Dean of the School of the Arts

Jill Beck

### Dean of the School of Biological Sciences

Ellie Ehrenfeld

### Dean of the School of Engineering

Allen R. Stubberud (Acting)

### Dean of the School of Humanities

Michael P. Clark (Acting)

### Dean of the Graduate School of Management

Dennis Aigner

### Dean of the School of Physical Sciences

Ralph J. Cicerone

### Dean of the School of Social Ecology

Daniel S. Stokols

### Dean of the School of Social Sciences

William R. Schonfeld

### Dean of the College of Medicine

Thomas C. Cesario

### Dean of the Division of Undergraduate Education

James N. Danziger

### Vice Chancellor Research and Dean of Graduate Studies

Frederic Yui-Ming Wan

### Chair of the Department of Education

Michael E. Martinez (Acting)

### Chair of the Department of Information and Computer Science

Michael J. Pazzani

## CHAIR OF THE UCI ACADEMIC SENATE

Howard M. Lenhoff

## UCI ADMINISTRATORS

Director of Intercollegiate Athletics: Daniel Guerrero  
 Associate Executive Vice Chancellor: William H. Parker  
 Assistant Executive Vice Chancellor for Affirmative Action: Marion E. Timm  
 Assistant Executive Vice Chancellor for Continuing Education and  
 Director of University Extension and Summer Sessions: Philip Nowlen  
 Assistant Executive Vice Chancellor Resource Management and Analysis:  
 Roy E. Dormaier  
 Assistant Executive Vice Chancellor—University Ombudsman: R. Ronald Wilson  
 University Librarian: Joanne R. Euster  
 Faculty Assistant to the Executive Vice Chancellor: Jane O. Newman  
 Faculty Assistant to the Executive Vice Chancellor: Lyman W. Porter  
 Associate Vice Chancellor Administrative and Business Services: Sandra Lier  
 Assistant Vice Chancellor Accounting and Fiscal Services: Stephen G. Garcia  
 Assistant Vice Chancellor Administrative Computing Services: David L.  
 Tomcheck  
 Assistant Vice Chancellor Design and Construction Services: Rebekah Gladson  
 Associate Vice Chancellor Research: Frances M. Leslie  
 Associate Dean of Graduate Studies: Mary C. Gilly  
 Associate Vice Chancellor Student Services: Charles R. Pieper  
 Assistant Vice Chancellor Enrollment Services: Juan Francisco Lara  
 Assistant Vice Chancellor Counseling and Health Services: Thomas A.  
 Parham  
 Assistant Vice Chancellor Student Services: Bernadette M. Strobel-Lopez  
 Dean of Students: Sally K. Peterson  
 Associate Vice Chancellor University Advancement: James Asp  
 Assistant Vice Chancellor Communications: Richard Elbaum

For a complete list of UCI administrators, please refer to the *University of California Telephone Directory* or the *UCI Campus and Medical Center Directory*.

## University Professors

J. Michael Bishop, University Professor Emeritus  
 University of California, San Francisco  
 E. Margaret Burbidge, University Professor Emerita  
 University of California, San Diego  
 Melvin Calvin, University Professor Emeritus  
 University of California, Berkeley  
 Marvin L. Cohen, University Professor  
 University of California, Berkeley  
 Donald Cram, University Professor Emeritus  
 University of California, Los Angeles  
 Gerard Debreu, University Professor Emeritus  
 University of California, Berkeley  
 Sandra M. Farber, University Professor  
 University of California, Santa Cruz  
 Richard M. Karp, University Professor Emeritus  
 University of California, Berkeley  
 Murray Krieger, University Research Professor  
 University of California, Irvine  
 Yuan Tseh Lee, University Professor  
 University of California, Berkeley  
 Glenn Seaborg, University Professor Emeritus  
 University of California, Berkeley  
 Jonathon S. Singer, University Professor Emeritus  
 University of California, San Diego  
 Neil Smelser, University Professor Emeritus  
 University of California, Berkeley  
 Edward Teller, University Professor Emeritus  
 Lawrence Livermore National Laboratory  
 Charles Townes, University Professor Emeritus  
 University of California, Berkeley  
 Sherwood Washburn, University Professor Emeritus  
 University of California, Berkeley  
 John R. Whinnery, University Professor Emeritus  
 University of California, Berkeley  
 Hayden White, University Professor  
 University of California, Santa Cruz

## UCI Nobel Laureates

Frederick Reines  
 UCI Distinguished Professor Emeritus of Physics  
*Nobel Prize in Physics, 1995*  
 F. Sherwood Rowland  
 Research Professor of Chemistry and Earth System Science and Bren Chair  
*Nobel Prize in Chemistry, 1995*

## UCI Endowed Chairs

**Daniel G. Aldrich, Jr. Chair**  
 Ralph J. Cicerone, Dean of the School of Physical Sciences and Professor of  
 Earth System Science and Chemistry

**Arnold and Mabel Beckman Chair in Laser Biomedicine**  
 Michael W. Berns, Professor of Surgery, Cell Biology, Ophthalmology,  
 Radiology, and Management

**Grace Beekhuis Bell Chair in Biological Chemistry**  
 Masayasu Nomura, Professor of Biological Chemistry, Microbiology and  
 Molecular Genetics, and Biological Sciences

**Bren Chairs**  
 Francisco J. Ayala, Founding Director of the Bren Fellows Program and  
 Professor of Ecology and Evolutionary Biology and of Philosophy  
 F. Sherwood Rowland, Research Professor of Chemistry and Earth System  
 Science

**FHP Foundation Chair in Health Care Management**  
 Paul J. Feldstein, Professor of Management and Social Ecology

**Walter B. Gerken Chair in Enterprise and Society**  
 Richard B. McKenzie, Professor of Management

**Clifford and Elaine Heinz Chair in the Economics and Public Policy of  
 Peace**  
 Martin McGuire, Professor of Economics and Management

**Irving H. Leopold Chair in Ophthalmology**  
 Richard H. Keates, Department Chair and Professor of Ophthalmology

**Dorothy J. Marsh Chair in Reproductive Biology**  
 Philip J. DiSaia, Chief of Gynecology and Gynecologic Oncology and  
 Professor of Obstetrics and Gynecology and of Radiological Sciences

**Della Martin Chair of Psychiatry**  
 William E. Bunney, Jr., UCI Distinguished Professor of Psychiatry and  
 Human Behavior, Pharmacology, and Psychobiology

**Danette Shepard Chair in Neurological Science**  
 Tallie Z. Baram, Professor of Pediatrics, Neurology, and Anatomy and  
 Neurobiology

**Teller Family Chair in Jewish History**  
 Daniel Schroeter, Associate Professor of History

**Thomas T. and Elizabeth C. Tierney Chair in Peace Studies**  
 Patrick Morgan, Director of Global Peace and Conflict Studies and Professor  
 of Political Science

**UC Presidential Chair**  
 Peter M. Rentzepis, Professor of Chemistry

**Drew, Chace, and Erin Warmington Chair in the Social Ecology of Peace  
 and International Cooperation**  
 Helen Ingram, Professor of Social Ecology and of Politics and Society

## UCI Distinguished Professors

William E. Bunney, Jr., Distinguished Professor of Psychiatry and Human  
 Behavior, Pharmacology, and Psychobiology  
 David Easton, Distinguished Professor Emeritus of Political Science  
 Harry Eckstein, Distinguished Professor Emeritus of Political Science  
 R. Duncan Luce, Director of the Institute for Mathematical Behavioral  
 Sciences and Distinguished Professor Emeritus of Cognitive Sciences  
 Ricardo Miledi, Distinguished Professor of Psychobiology  
 J. Hillis Miller, Distinguished Professor of English and Comparative  
 Literature  
 Larry E. Overman, Distinguished Professor of Chemistry  
 Frederick Reines, Distinguished Professor Emeritus of Physics  
 George Sperling, Distinguished Professor of Psychology

## College of Medicine Distinguished Professor

J. Edward Berk, Distinguished Professor Emeritus of Medicine

## UCI Faculty Membership in Major U.S. Learned Societies

American Academy of Arts and Sciences: 28

American Association for the Advancement of Sciences: 70

American Physical Society: 16

American Psychological Association: 13

National Academy of Engineering: 2

National Academy of Sciences: 15

## UCI Academic Senate Distinguished Faculty

### Distinguished Faculty Lectureships for Teaching

- 1996: Lynn Mally, Department of History, "Seeing Through History: Visual Evidence in Teaching"
- 1995: Imran S. Currim, Graduate School of Management, "Consumer Choice"
- 1994: Michael P. Johnson, Department of History, "The Politics of Teaching"
- 1994: Philip J. DiSaia, Department of Obstetrics and Gynecology, "The Aging Woman"
- 1993: Gary W. Evans, School of Social Ecology, "The Improvement of Teaching in the University Environment"
- 1992: James H. Mulligan, Department of Electrical and Computer Engineering, "The Quest for Excellence in Educating Engineering Professionals"
- 1991: Thomas A. Standish, Department of Information and Computer Science, "A Grand Challenge Problem for Education: Empowering Graduating Seniors to Write Well"
- 1990: Robert T. McIver Jr., Department of Chemistry, "Those Marvelous Machines: The Role of Scientific Instruments"
- 1989: John C. Rowe, Department of English and Comparative Literature, "Crisis and Criticism in the Humanities"
- 1988: James N. Danziger, Department of Politics and Society, "Knowing Noes and Wise Whys"

### Distinguished Faculty Lectureships for Research

- 1996: John J. Wasmuth, Departments of Biological Chemistry, Pediatrics, and Psychiatry and Human Behavior
- 1995: Chen S. Tsai, Department of Electrical and Computer Engineering, "The Versatile Photon: Express Messenger of the Information Superhighway"
- 1994: R. Duncan Luce, School of Social Sciences, "Mathematical Psychology: an Oxymoron or Not?"
- 1993: Eric Stanbridge, Department of Microbiology and Molecular Genetics, "Cancer and Our Genes: the Seeds of Our Own Destruction"
- 1992: J. Hillis Miller, Department of English and Comparative Literature, "Thinking Like Other People"
- 1991: A. Kimball Romney, Department of Anthropology, "Cultural Consensus and Social Intelligence"
- 1990: Lyman W. Porter, Graduate School of Management, "Organizations and Their Employees: How Sound Are the Marriage Contracts?"
- 1989: Norman Rostoker, Department of Physics, "Research on Future Energy Sources"
- 1988: Robert W. Taft, Department of Chemistry, "Attempts to Understand and Treat the Loves and Hates of Organic Molecules"
- 1987: Carl W. Cotman, Department of Psychobiology, "The Self-Repairing Brain: Implications for Alzheimer's Disease"
- 1986: Donald Heiney, Department of English and Comparative Literature, "Fiction: The Double Domain of the Nineteenth-Century Crisis"
- 1985: James L. McGaugh, Department of Psychobiology, "Making Memories"
- 1984: John Johnston, Department of Economics, "Economists and Their Crises"
- 1983: Murray Krieger, Department of English and Comparative Literature, "Words About Words About Words: The What and Why of Literary Theory"

1982: Kivie Moldave, Department of Biological Chemistry, "The Fault, Dear Brutus, Lies Not in the Stars but in Our Genes"

1981: Gilbert L. Geis, School of Social Ecology, "The Crime Intervenor: Samaritan or Superman?"

1980: Jaime E. Rodríguez, Department of History, "Down from Colonialism: Mexico's Nineteenth-Century Crisis"

1980: Seymour Menton, Department of Spanish and Portuguese, "Many years later, as he faced the firing squad, Colonel Aureliano Buendia was to remember that distant afternoon when his father took him to discover ice." (Gabriel Garcia Marquez, *One Hundred Year of Solitude*)

1979: Frederick Reines, Department of Physics, "The Neutrino: From Poltergeist to Particle"

1978: Arthur J. Marder, Department of History, "Bravery Is Not Enough: The Rise and Fall of the Imperial Japanese Navy, 1941–45"

1977: F. Sherwood Rowland, Department of Chemistry, "Chemistry and the Environment"

1976: H. Colin Slim, Department of Music, "The Prodigal Son at the Whores: Music, Art, and Drama"

### Daniel G. Aldrich Jr. Distinguished University Service Award

1995: Michael Butler, Former Dean of Undergraduate Studies, Director of the UCI Farm School, and Department of Cognitive Sciences

1994: Leslie W. Rabine, Department of French and Italian and Program in Women's Studies

1993: Murray Krieger, Department of English and Comparative Literature

1993: J. Edward Berk, Department of Medicine

1992: Louis A. Gottschalk, Department of Psychiatry and Human Behavior

1991: Spencer C. Olin, Department of History

1991: Julius Margolis, Department of Economics

### Distinguished Assistant Professor Award for Teaching

1995–96: Etel Solingen, Department of Politics and Society

1994–95: Julia Reinhard Lupton, Department of English and Comparative Literature

### Distinguished Assistant Professor Award for Research

1995–96: Ann Blair, Department of History, and Kei-Yeung (Sunny) Siu, Department of Electrical and Computer Engineering

1994–95: Alec Stone, Department of Political Science

### Presidential Award for Excellence in Undergraduate Research

(Faculty recipient)

1995: Julia Reinhard Lupton, Department of English and Comparative Literature

1994: Roger D. McWilliams, Department of Physics and Astronomy

## 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 Section 51.16 of the *Policies Applying to Campus Activities, Organizations, and Students, Part A*.)

All who work, live, study, and teach at UCI are here by choice and, as part of that choice, should be committed to these Principles of Community which are an integral part of the guidelines by which the University community can successfully conduct its affairs.

## Student Conduct and Discipline

Students enrolling in the University are expected to assume an obligation to conduct themselves in a manner compatible with the University's function as an educational institution. A handbook is available which sets forth standards of conduct expected of UCI students. *Policies Applying to Campus Activities, Organizations, and Students, Part A* 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 Executive Vice Chancellor—University Ombudsman, located in 255 Administration Building, and from the Dean of Students, 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 Services 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 Services 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, (b) the Associate Dean of the student's school, and (c) the Dean of Students' office. 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 Dean of Students and to the University Ombudsman who will investigate the incident, if necessary.

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.

**Honors at Graduation.** Students who have on file recorded acts of academic dishonesty, as defined in *Policies*, shall be excluded by the Associate Deans from consideration for academic honors at graduation.

### Responsibility of the University Ombudsman

Whenever the University Ombudsman's Office receives reports about academic misconduct or student-faculty conflict from an Associate Dean, faculty member, or individual student, the Ombudsman will investigate the circumstances of the incident, following the procedures specified under campus policy 52.122, and will 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 Services

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 Services. Formal or informal resolution under the authority of the Vice Chancellor-Student Services 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 and the Dean of Students 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 the Vice Chancellor Student Services, 405 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, UCI Student Center.



## Computer-Use Policy

The University of California, Irvine (UCI) provides computing resources and worldwide network access to members of the UCI electronic community for legitimate academic and administrative pursuits to communicate, access knowledge, and retrieve and disseminate information. As members sharing these resources, we also share the rights and responsibilities of their use. This document describes the shared rights and responsibilities as well as the consequences of misuse. *Please read it as you are responsible for knowing and following these policies.* We welcome your use of campus computing resources and your cooperation.

### Rights and Responsibilities

Worldwide, open-access electronic communication is a privilege, and continued access requires that users act responsibly. Users should be able to trust that the products of their intellectual efforts will be safe from violation, destruction, theft, or other abuse. As a user sharing computing resources, you must respect and value the rights and privacy of others, respect the integrity of the systems and related physical resources, and observe all relevant laws, regulations, and contractual obligations. You are responsible to refrain from acts that waste resources, prevent others from using them, harm resources or information, or abuse other people. To help protect your files, you are responsible for setting passwords appropriately and keeping your password confidential by not giving it to another person.

Most UCI owned computers are under the control of a system administrator or lab manager. Like you, these administrators are expected to respect the privacy of computer system users. However, UCI computer system administrators may access user files or suspend services on the systems they manage without notice as required to protect the integrity of computer systems or to examine accounts that are suspected of unauthorized use, misuse, or have been corrupted or damaged. This includes temporarily locking vulnerable accounts, removing hung jobs, reprioritizing resource intensive jobs, and more.

Many UCI departments have their own computing and networking resources and policies. When accessing computing resources, users are responsible for obeying both the policies set forth in this general computing document and the policies of the other departments.

### Examples of Misuse

Examples of misuse include, but are not limited to, the activities on the following list:

- Knowingly running or installing on any computer system or network, or giving to another user, a program intended solely for the purpose of damaging or placing excessive load on a computer system or network. This includes, but is not limited to, computer viruses, Trojan horses, worms, or password cracking programs.
- Attempting to circumvent data protection schemes or uncover security loopholes without prior written consent of the system administrator. This includes creating and/or running programs that are designed to identify security loopholes and/or intentionally decrypt secure data.
- Using computers or electronic mail to act abusively toward others or to provoke a violent reaction, such as stalking, acts of bigotry, threats of violence, or other hostile or intimidating "fighting words." Such words include those terms widely recognized to victimize or stigmatize individuals on the basis of race, ethnicity, religion, sex, sexual orientation, disability, for example.
- Posting on electronic bulletin boards materials that violate the University's codes of conduct. This includes posting on Internet services information that are slanderous or defamatory in nature or displaying graphically disturbing or sexually harassing images or text in a public computer facility or location that are in view of other individuals.
- Attempting to monitor or tamper with another user's electronic communications or reading, copying, changing, or deleting another user's files or software without the explicit agreement of the owner.
- Violating terms of applicable software licensing agreements or copyright laws.
- Using the campus network to gain unauthorized access to any computer system.
- Using a computer account or obtaining a password that you are not authorized to use.

- Masking the identity of an account or machine. This includes sending mail that appears to come from someone else.
- Knowingly performing an act without authorization which will interfere with the normal operation of computers, terminals, peripherals, networks, or which will interfere with others' ability to make use of the resources.
- Using your account for any activity that is commercial in nature not related to your work at UCI, such as consulting services, typing services, developing software for sale, advertising products, and/or other commercial enterprises for personal financial gain.
- Deliberately wasting computing resources, such as playing games (for example, MUDS) while someone else is waiting to use the computer for UCI related work, sending chain letters, treating the printer like a copy machine, storing or moving large files which could compromise system integrity or preclude other users right of access to disk storage, and more.

### Consequences of Misuse

Misuse of computing, networking, or information is unacceptable, and users will be held accountable for their conduct. Serious infractions can result in temporary or permanent loss of computing and/or network privileges, student judicial affairs review and discipline, and/or Federal or State legal prosecution. California Penal Code Section 502 makes certain computer abuses a crime (such as illegal reproduction of software protected by U.S. copyright law), and penalties can include a fine and/or imprisonment. Files may be subject to search under proper authorization.

Minor infractions of this policy, such as poorly chosen passwords, overloading systems, excessive disk space consumption, are typically handled internally to the department in an informal manner. More serious infractions such as abusive behavior, account invasion or destruction, attempting to circumvent system security, are handled formally through the Dean of Students Office or by other appropriate officials.

### For More Information

For more information, contact the Office of Academic Computing, E2130 Engineering Gateway Building, telephone (714) 824-6116, or send electronic mail to oac@uci.edu. Also, students may want to read the *UCI Interim Policies and Procedures Applying to Campus Activities, Organizations, and Students*, which is available from the Dean of Students Office.

### Acknowledgements

This document has been adapted in part from the UCI ICS Department, UC Berkeley, and UC Davis computer-use policies.

## 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, number of course units in which enrolled, 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 Executive Vice Chancellor-University Ombudsman, 255 Administration.

It is extremely important for each student to keep the Registrar's Office currently informed as personal data changes occur to assure that accurate and complete records are maintained.

Students are informed annually of their rights under the University's student records policies and 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 and Relations with Schools
Admissions—Graduate	Administration	Dean, Graduate Studies
Admissions—College of Medicine	Med. Sci. I	Director, Admissions
Career and Life Planning Center	Student Services	Director, Career and Life Planning Center
Child Care Services	Early Childhood Education Center	Director, Child Care Services
Counseling	Student Services	Director, Counseling Services
Dean of Students	Student Center	Dean of Students
Disability Services	Disabled Student Center	Director, Disability Services
Education Abroad Program	Student Services	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
Placement Testing Program	Student Services	Director, Testing, Research, and Evaluation
Registrar—Graduate/Undergraduate	Administration	Registrar
College of Medicine	Med. Sci. I	Assistant Deputy Registrar
Relations with Schools	Administration	Director, Admissions and Relations with Schools
Student Academic Advancement Services	Student Services	Director, Student Academic Advancement Services
Student Conduct	Student Center	Dean of Students
Student Health	Student Health Center	Director, Student Health
Summer Session	University Extension	Director, Summer Session
Tutorial Assistance Program	Student Services	Director, Tutorial Assistance Program
Undergraduate Education	Administration	Dean, Undergraduate Education
University Extension	University Extension	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 Services, or other Student Services officials

## Salary and Employment Information

Field of Study	Degree Level of Graduates		
	Bachelor's	Master's	Doctorate
Average Monthly Salary *			
Engineering	\$2,984	\$3,464	\$4,532
Humanities	1,944	2,570	2,597
Biological Sciences	1,906	2,447	3,986
Management	—	3,305	4,566
Physical Sciences	2,517	3,044	4,428
Social Sciences	1,907	2,292	3,257

\* Source: A national survey conducted by the National Association of Colleges and Employers, representing the average range of offers as of September 1995 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.

## Graduation Rates by Ethnicity and Gender

The information below is provided by UCI's Office of Analytical Studies in compliance with the Student Right-to-Know and Campus Security Act of 1990 (Public Law 101-542).

Gender and Ethnicity	Fall 1989 All Entering Freshmen			Fall 1989 All Entering Athletically aided Freshmen		
	Entered	Graduated	Graduation Rate *	Entered	Graduated	Graduation Rate *
<b>Men</b>						
African American	26	11	42%	2	2	100%
American Indian	7	5	71%	0	0	0%
Asian	451	328	73%	0	0	0%
Hispanic	117	64	55%	1	1	100%
Other	93	60	65%	1	0	0%
White	396	272	69%	9	5	56%
<b>Total</b>	<b>1,090</b>	<b>740</b>	<b>68%</b>	<b>13</b>	<b>8</b>	<b>62%</b>
<b>Women</b>						
African American	73	36	49%	0	0	0%
American Indian	15	7	47%	0	0	0%
Asian	459	338	74%	0	0	0%
Hispanic	190	112	59%	1	1	100%
Other	102	71	70%	1	0	0%
White	380	258	68%	8	4	50%
<b>Total</b>	<b>1,219</b>	<b>822</b>	<b>67%</b>	<b>10</b>	<b>5</b>	<b>50%</b>
<b>Total Entering Freshmen</b>						
African American	99	47	47%	2	2	100%
American Indian	22	12	55%	0	0	0%
Asian	910	666	73%	0	0	0%
Hispanic	307	176	57%	2	2	100%
Other	195	131	67%	2	0	0%
White	776	530	68%	17	9	53%
<b>Total</b>	<b>2,309</b>	<b>1,562</b>	<b>68%</b>	<b>23</b>	<b>13</b>	<b>57%</b>

NOTE: UPHSS, Department of Education credential students, and visitors are excluded.

Source: OASIM Student Tracking System, 12-95 updates.

## Cumulative Graduation Rates by Intercollegiate Sport

Fall 1989 entering freshmen who received athletically related financial aid.

Entering Group	Entered	Graduated	Graduation Rate *	Entered	Graduated	Graduation Rate *
	MEN			WOMEN		
<b>Baseball</b>						
African American	0	0	0%			
American Indian	0	0	0%			
Asian	0	0	0%			
Hispanic	0	0	0%			
Other	0	0	0%			
White	1	0	0%			
<b>Total</b>	<b>1</b>	<b>0</b>	<b>0%</b>			
<b>Basketball</b>						
African American	2	2	100%	0	0	0%
American Indian	0	0	0%	0	0	0%
Asian	0	0	0%	0	0	0%
Hispanic	0	0	0%	0	0	0%
Other	1	0	0%	1	0	0%
White	2	0	0%	2	2	100%
<b>Total</b>	<b>5</b>	<b>2</b>	<b>40%</b>	<b>3</b>	<b>2</b>	<b>67%</b>
<b>Track/Cross Country</b>						
African American	0	0	0%	0	0	100%
American Indian	0	0	0%	0	0	0%
Asian	0	0	0%	0	0	0%
Hispanic	1	1	100%	1	1	100%
Other	0	0	0%	0	0	0%
White	2	2	100%	2	0	0%
<b>Total</b>	<b>3</b>	<b>3</b>	<b>100%</b>	<b>3</b>	<b>1</b>	<b>33%</b>
<b>Other and Mixed Sports</b>						
African American	0	0	0%	0	0	0%
American Indian	0	0	0%	0	0	0%
Asian	0	0	0%	0	0	0%
Hispanic	0	0	0%	0	0	0%
Other	0	0	0%	0	0	0%
White	4	3	75%	4	2	50%
<b>Total</b>	<b>4</b>	<b>3</b>	<b>75%</b>	<b>4</b>	<b>2</b>	<b>50%</b>

NOTE: UPHSS, Department of Education credential students, and visitors are excluded.

Source: OASIM Student Tracking System, 12-95 updates.

## Crime within the UCI Community

While crimes do occur within the UCI community (campus and Medical Center), the rates of both violent crime and property crime have remained low. Burglary and theft (including automobiles and bicycles) are the most prevalent crimes reported.

The following data are provided in compliance with the Federal Student Right-to-Know and Campus Security Act of 1990 (Public Law 101-542), and similar California legislation (AB 3918 and 1094).

Additional data, along with required campus policy and program information, are published annually in September by the UCI Police Department in the *Crime Awareness Bulletin*, which is distributed to new and continuing students, as well as to faculty and staff, at both the campus and the Medical Center. When a serious threat to the UCI community exists, informational crime bulletins are posted and circulated.

## SAFETY TIPS

Day and night, no matter where students go, they should be aware of their surroundings, should exercise good common sense, and should use safety precautions as they would elsewhere. UCI provides a Campus Escort Service, which is available by contacting the UCI Police Department at (714) 824-5223.

Theft is the most common security problem. Students living on campus should keep their doors locked at all times. In offices, valuables should be kept locked up. Doors to laboratories and buildings should be locked by the last person to leave. The presence of unknown visitors should be reported to the UCI Police Department. Vehicles (including bicycles) should be locked when parked.

### UCI CRIME STATISTICS: 1993-95

Campus	1993		1994		1995	
	Reported	Arrested	Reported	Arrested	Reported	Arrested
Offense						
Aggravated Assault	7	6	6	6	1	0
Alcohol	17	17	12	12	27	17
Burglary	96	6	50	1	41	3
Drug/Narcotics Offense	6	6	16	16	21	21
Hate Crimes	7	7	1	0	1	1
Homicide	0	0	0	0	0	0
Motor Vehicle Theft	23	11	15	6	26	17
Rape	3	2	3	3	0	0
Attempted Rape	0	0	0	0	0	0
Sexual Assault	3	1	2	1	8	1
Robbery	3	2	1	0	1	0
Simple Assault	20	20	6	6	17	16
Theft	573	33	610	20	676	25
(includes bicycles)						
Vandalism	73	1	56	3	88	2
Weapons Offenses	5	5	4	4	20	13

Medical Center	1993		1994		1995	
	Reported	Arrested	Reported	Arrested	Reported	Arrested
Offense						
Aggravated Assault	1	1	0	0	0	0
Alcohol	3	3	11	11	31	31
Burglary	8	1	16	0	22	1
Drug/Narcotics Offense	2	2	25	24	40	36
Hate Crimes	0	0	1	1	1	1
Homicide	1	1	0	0	0	0
Motor Vehicle Theft	12	9	6	1	22	13
Rape	0	0	0	0	1	1
Attempted Rape	0	0	0	0	0	0
Sexual Assault	0	0	1	1	7	1
Robbery	0	0	0	0	0	0
Simple Assault	4	4	8	7	8	8
Theft	85	5	83	5	290	10
(includes bicycles)						
Vandalism	0	0	18	2	50	1
Weapons Offenses	1	1	8	8	17	16

NOTE: UCI crime statistics as reported in the *Catalogue* are taken from UC Systemwide Police statistics which are reported and compiled on a monthly basis throughout the calendar year. UCI crime statistics as reported in the Campus Crime Awareness Bulletin are compiled and reconciled at year end and will denote crimes that were cleared at a later date and/or reflect cases that were determined to be unfounded.

### TO REPORT AN INCIDENT

On campus, students should dial 9-1-1 for a police, medical, or fire emergency, or should use the emergency call boxes (identified by the blue light on the box) located around the ring mall, in parking structures, and in other parking areas. At the Medical Center, people should dial 456-6123 for a police emergency or 456-6234 to report a fire or medical situation.

UCI police officers are duly sworn State peace officers. They are armed and possess the same legal authority as do the municipal and county police agencies. They enforce the law, arrest violators, investigate accidents, and provide a full range of police-related services, including immediate response to medical aid situations and fire emergencies.

### POLICIES ON SUBSTANCE ABUSE AND WEAPONS

UCI is designated a drug-free environment, and only under certain conditions is the consumption of alcohol permitted. State laws and University policies are enforced, and violators are subject to disciplinary action, criminal prosecution, fine, and imprisonment.

Section 626.9 of the California Penal Code makes it a felony to bring or to possess a firearm on the grounds, or within buildings (including private residences), of the University of California.

## Nondiscrimination and Affirmative Action Policy Statements

**Student-Related Matters.** The University of California, in accordance with applicable Federal and State law and University policy, does not discriminate on the basis of race, color, national origin, religion, sex, disability, age, medical condition (cancer-related), ancestry, marital status, citizenship, sexual orientation, or status as a Vietnam-era veteran or special disabled veteran. The University also prohibits sexual harassment. This nondiscrimination policy covers admission, access, and treatment in University programs and activities.

Inquiries regarding the University's student-related nondiscrimination policies may be directed to: Marion E. Timm, Assistant Executive Vice Chancellor, University of California, Irvine, Office of Affirmative Action/Equal Opportunity, 524 Administration Building # 1125, CA 92697-1125; telephone (714) 824-5594.

**Employment Practices.** The University of California, in accordance with applicable Federal and State law and University policy, prohibits discrimination against or harassment of any person employed by or seeking employment with the University on the basis of race, color, national origin, religion, sex, physical or mental disability, medical condition (cancer-related), ancestry, marital status, or age. The University of California also prohibits discrimination on the basis of sexual orientation, status as a Vietnam-era veteran or special disabled veteran, or, within the limits imposed by law or University policy, on the basis of citizenship.

In conformance with applicable law and University policy, the University of California is an equal opportunity employer. The University develops an affirmative action plan as required by federal regulations for underrepresented minorities and women, for persons with disabilities, and for Vietnam-era veterans and special disabled veterans. The University of California is committed to "good faith" efforts to rectify discrimination patterns or practices which result in underutilization.

Inquiries regarding the University's equal employment opportunity policies regarding academics, staff, and management may be directed to: Marion E. Timm, Assistant Executive Vice Chancellor, University of California, Irvine, Office of Affirmative Action/Equal Opportunity, 524 Administration Building #1125, CA 92697-1125; telephone (714) 824-5594.

## About the Catalogue

### Catalogue Information, Design, and Production Coordination

Office of Academic Affairs

Jeni M. Duke, University Editor

Leslie A. O'Neal, Associate University Editor

Gay van der Linden, Editor

The 1996-97 UCI General Catalogue, Volume 30, was produced using QuarkXPress 3.31.

### Cover Design, Photography, Maps

Communications Office

Heidi Cholodenko, Publications Director

Diane Sagen, Art Director

Felipe Vasquez, Photography Assistant

# INDEX

## A

- Academic advising 53, 88, 379
- Academic Affairs, Office of 9
- Academic calendar, inside front cover
- Academic Computing 11
- Academic dishonesty 399
- Academic disqualification 71, 89
- Academic goals 9
- Academic procedures and regulations 68-72, 89-91
- Academic Senate 4, 9
- Academic standing 71
- Academic structure 9
- Academic Support Services, Program of 53
- Access UCI Program 73
- Accreditation 9
- Acting 102
- Adding courses 65
- Administration, Ph.D in 265
- Administration, University 4, 396
- Administrative interns, undergraduate 76
- Administrative officers, UCI 396
- Administrative Services Credential 144
- Admissions and Relations with Schools 20
- Admissions, graduate 87
- Admissions, medical 378
- Admissions, undergraduate 41
  - advanced placement 48-49
  - American History and Institutions 58
  - application 41, 49
  - Application Fee 33, 49
  - Basic eligibility requirements 42
  - by examination alone 44
  - Certificate of Proficiency 41, 42, 50
  - course requirements "A through F" 42
  - credit for native language 47
  - credit for work taken elsewhere 63, 72
  - Educational Opportunity Program (EOP) 21, 31
  - Eligibility index 44
  - English language proficiency 47
  - examination arrangements 50
  - freshman applicant 41
  - General Educational Development (GED) exam 41, 42, 50
  - honors-level courses 43
  - international students 47
  - multiple applications 49
  - nonresident freshman 46
  - nonresident transfer applicant 46
  - notification of 50
  - part-time study 66
  - physical examination 80
  - readmission 67, 90
  - scholarship requirement 43
  - second bachelor's degree 46
  - Subject A 53, 57, 59
  - subject requirement 42
  - transfer students 44, 45, 50
  - University Program for High School Scholars (UPHSS) 21, 41, 44
- Advanced Computing Research Unit 85
- Advanced placement 48
- Advanced standing (transfer) unit classification 71
- Advancement to candidacy 91
- Advising, academic. See Academic advising
- Affiliated hospitals and clinics 12, 378
- Affiliate organizations 13
- Affirmative Action and Equal Opportunity, Office of 9
- African-American Studies 250
- Algorithms and Data Structures 240
- Algorithms and Data Structures 245
- Alumni Association 13
- American Academy of Arts and Sciences 10
- American College Test (ACT) 43, 44, 46, 49, 50
- American History and Institutions 58
- Anatomy and Neurobiology 138, 387
- Announcements, school and departmental 74
- Anthropology 327
- Anti-Hazing Compliance 400
- Apartments 77
- Application for graduation 61
- Application procedures for admission. See Admissions
- Applied Ecology 301
- Applied Physics 292
- Arboretum, UCI 12, 122
- Areas of graduate study 25-26
- Areas of undergraduate study 23-24
- Art History 190
- Art, Studio 112
- Articulation agreements 20, 62
- Artificial Intelligence 242, 244

- Arts Interdisciplinary 95
- Arts, School of the 94
- Asian American Studies 250
- Associated Graduate Students (AGS) 79
- Associated Medical Students (AMS) 79
- Associated Students (ASUCI) 79
- Astronomy 289
- Astrophysics 292
- Athletics 80
- Audiovisual services 11

## B

- Bachelor's degree, requirements for 57-61
- Beckman Laser Institute and Medical Clinic 10, 122, 377
- Bequests 13
- Bilingual Crosscultural Language and Academic Development (BCLAD) 145
- Bilingualism 235
- Biochemistry 131, 135
- Biological Chemistry 140, 388
- Biological Sciences 117
- Biomedical Physics 292
- Board of Regents 4, 396
- Bookstore, UCI 74
- Brain Aging and Dementia 84
- Breadth requirement 58-61, 62
- Bren Chairs 397
- Bren Events Center 74, 81
- Burns Piñon Ridge Reserve 12
- Bus service 10
- Business Administration, Master of 265
- Business/management, preprofessional preparation for 28

## C

- Calendar, academic, inside front cover
- California Certificate of Proficiency 41, 42, 50
- California residence 34, 67
- Campus clubs and organizations 76
- Campus life and services 74-80
- Campus publications 73

- Campus setting 10
- Campus tours 21
- Campuswide Honors Program 54
- Cancellation/Withdrawal 66
- Cancer Center. *See* Chao Family Cancer Research Institute 83
- Career opportunities 29
- Career and Life Planning Center 74
- Catalogue
  - how to use 20
  - how to order, inside front cover
  - Rights 57
- Celebrate UCI 21
- Center for
  - Educational Partnerships 31
  - International Education 55
  - Neurobiology of Learning and Memory 83
  - Occupational and Environmental Health 13
  - Research on Information Technology and Organizations (CRITO) 83
  - Women and Gender Education 77
- Certificate of Proficiency 41, 42, 50
- Chancellors 4, 396
- Change
  - of class enrollment 65
  - of grade 68, 69
  - of grading option 65
  - of major 26
  - of personal data 401
- Chao Family Clinical Cancer Research Center 378
- Chemistry 274
- Chicano/Latino Studies, minor in 251
- Child Care Services 75
- Chinese 198
- Class, change of 65
- Class level 70
- Classes, Schedule of. *See* Schedule of Classes
- Classical Civilization 194
- Classics 194
- Clear Credential 143
- Clinical facilities 12, 377
- Clubs 76
- College Board
  - Achievement Examinations. *See* SAT II
  - Advanced Placement Examination 48-49, 57
  - examination arrangements 50
  - Scholastic Assessment Test I and II (SAT I II) 43-44, 46, 47, 49, 50
- Cognitive Sciences 332
- College of Medicine 369
  - admission 378
  - advisor system 379
  - affiliated hospitals and clinics 378
  - application fee 378
  - curriculum 380
  - Educational Affairs 383
  - facilities 377
  - fees 32
  - graduate academic programs 387
  - Medical College Admission Test 123, 379
  - medical residency programs 385
  - Medical Scientist Program (M.D./Ph.D.) 380
  - postgraduate educational programs 385
- Combustion/Propulsion 182
- Commencement 67
- Community colleges 21, 62
- Comparative Literature 202
- Computer
  - Store, UCI 74
  - Systems Design 244
  - Use Policy 401
- Computer Science, Information and 240
- Computing, Advanced 85
- Computing, Office of Academic 11
- Computing, Organizations, Policy, and Society 244
- Concentrations 23
- Concurrent enrollment. *See* Access UCI Program
- Conduct, student 399
- Continuous registration 90
- Costs, estimated 32
- Counseling. *See* Academic advising
- Counseling Center 75
- Course listings. *See* individual school and department sections
- Courses
  - add or drop 65
  - credit for. *See* Credit for courses
  - designations 20
  - load limits 70, 90
  - numbering of 20
  - repeating 69
- Creative Writing 203
- Credentials, teaching 143
- Credit, baccalaureate 68
- Credit for courses 20, 47, 48-49, 62, 63, 68, 69, 70
  - by examination 70
  - taken elsewhere 63, 91
  - high school students 44
- Credit for native language 47, 190
- Credits for graduation 57
- Credit, workload 68
- Crime statistics 403
- Criminology, Law and Society 302, 315
- Critical Theory, Emphasis in 226
- Critical Theory Institute 84
- Cross-Cultural Center 76
- Crosscultural Language and Academic Development emphasis (CLAD) 145

## D

- Dance 96
- Day care 75
- Dean of Students 75
- Declaring a major 26
- Degree, filing for
  - graduate 92
  - undergraduate 61
- Degrees, list of 22
- Democratization 86
- Dental services 80
- Departmental and school announcements 74
- Design and stage management 102
- Developmental and Cell Biology 132
- Developmental Biology Center 84, 122
- Diplomas 67, 92
- Directing 102
- Disability Services, Office for 76
- Discipline 399
- Disclosure of public information 401
- Disqualification, subject to
  - graduate students 89
  - undergraduate students 71
- Distinguished Faculty, UCI Academic Senate 398
- Distinguished Professors, UCI 397
- Division of Undergraduate Education 52
- Dormitories. *See* Residence halls
- Double majors 26
- Drama 101

**E**

Early Academic Outreach 31  
 Earth System Science 281  
 East Asian Languages and Literatures 197  
 Ecological Preserve 12, 122  
 Ecology, Applied 301  
 Ecology and Evolutionary Biology 134  
 Economics 338  
 Education, Department of 143  
 Education Abroad Program 55  
 Education, Credential Programs 143  
 Educational Administration 145  
 Educational Fee 32  
 Educational Opportunity Program 21, 31  
 Elective credit 48, 49, 63  
 Electro-optics and Solid-State Devices 175  
 Eligibility index 44  
 Employment, student 40, 74, 403  
 Endowed Chairs, UCI 397  
 Engineering 151  
     Chemical and Biochemical 161  
     Civil and Environmental 165  
     Electrical and Computer 173  
     Environmental 158  
     Materials Science 160  
     Mechanical and Aerospace 180  
 English 202  
 English as a Second Language 47, 73, 224  
     courses 225  
 English, proficiency in 47, 88  
 Enrollment 65  
     concurrently in Extension 73  
     graduate 90  
 Enrollment and payment of fees 65  
 Enrollment statistics 4-7  
 Environmental Analysis and Design 304, 314  
 Environmental Biotechnology 87  
 Environmental Health Science and Policy 315  
 Environmental simulation laboratory 298  
 Environmental Toxicology 388  
 Epidemiology and Public Health 304  
 ESL. See English as a Second Language  
 Ethnic studies. See Interdisciplinary Studies  
 Evolutionary Biology 134  
 Examination, credit by 70  
 Examinations, final 70  
 Excellence in Research Program  
     Biological Sciences 122  
     Engineering 155  
     Psychology 332

Exchange, intercampus 90  
 Executive M.B.A. Program 266  
 Expenses 32  
 Extension, University 63, 72, 91  
 Eye Clinic 80

**F**

Faculty. See individual school and department sections  
 Family Educational Rights and Privacy Act 401  
 Farm School 324  
 Fees 32-33  
     Advancement to candidacy 33, 91  
     Filing Fee 33, 92  
     fines and penalties 33, 65  
     late payment of 33, 65  
     miscellaneous 33  
     Nonresident Tuition 32, 34  
     refunds 35  
     service charges 33  
 Feminist Studies 257  
 Field study, Social Ecology 299  
 Filing for graduation 67, 92  
 Film Studies, Program in 208  
 Final examinations 70  
 Financial aid 36  
     EOP 31  
     graduate student 92  
     international students 40  
     medical students 40  
     satisfactory academic progress 36  
     special expenditures 36  
     students with disabilities 40  
 Focused Research Programs 86  
 Food service 77, 78, 79  
 Foreign language placement 190  
 Foreign students. See International Students  
 Fraternities 76  
 French and Italian 209  
 Fully Employed M.B.A. Program 266

**G**

General Studies Advising Program 53  
 Genetics, Molecular 141, 391  
 Genetic Counseling 390  
 Geography 343  
 German 213  
 Gifts and bequests 13  
 Global Peace and Conflict Studies 252  
     IRU in 86  
 Global Sustainability 261  
 Good standing 71  
 Grade point average  
     computing of 68  
     needed for admission 43, 45, 46  
     needed for graduate students 87, 89  
     needed to graduate 58  
 Grades 68-70  
     Appeal of 68  
     Incomplete 68, 89  
     In Progress 68, 69, 89  
     Not Reported 68, 69  
     Pass/Not Pass 68, 69  
     removal of deficient 69  
     Satisfactory/Unsatisfactory 69, 89  
     student copies 70  
     Withdrew 68  
     Writing Requirement 59, 70  
 Graduate and Professional Opportunity Program (GPOP) 31, 87, 92  
 Graduate Council 87, 91  
 Graduate counselors 88  
 Graduate education 87  
 Graduate programs. See individual schools  
 Graduate School of Management 263  
 Graduate School of Management Associated Students 79  
 Graduate Studies. See Office of Research and Graduate Studies  
 Graduate Studies, Dean of 9, 82, 87  
 Graduate degrees 91  
     areas of study 25-26  
     titles 22  
     conferral of 92  
 Graduate or professional study, preparation for 28  
 Graduation, filing application for 67  
 Graduation rates 403  
 Grants 38  
 Greek 194  
 Greek organizations 76  
 Grievances, academic 68  
 Grievances, individual 76



- H**
- Hazing, California statutes regarding 400
- Health
- care management 266
  - clearance 80
  - Education 77
  - Policy and Research 86
  - Psychology 315
  - Sciences advising 123
  - science-related careers, preprofessional preparation for 28
  - Service, student 80
- Health Care Executive M.B.A. Program 266
- Heat Transfer/Fluid Mechanics 182
- Hebrew 194
- High school proficiency examination. See Admissions, General Educational Development (GED) exam
- History 216
- History and Philosophy of Science
- graduate emphasis 229
  - undergraduate minor 253
- History examination. See American History and Institutions
- Honors and academic dishonesty 400
- Honors at graduation 55, 71
- Honors Convocation 55
- Honors Programs 54
- Acting 102
  - Anthropology 327
  - Campuswide 54
  - Chemistry 275
  - Economics 339
  - Humanities 189
  - Information and Computer Science 243
  - Linguistics 344
  - Physics 291
  - Political Science 348
  - Psychology 333
  - Social Ecology 299
  - Social Science 356
  - Sociology 359
- Hospital, UCI Medical Center 12, 377
- Housing 77
- refund policies 36
- How to use the Catalogue 20
- Human Development 316
- Humanities 188
- Core Course 188, 225
  - Instructional Resource Center 188
  - interdisciplinary graduate studies 226
  - interdisciplinary undergraduate major 223
  - Research Institute 82
- Humanistic Inquiry requirement. See Breadth requirement
- Human Service Corps 76
- I**
- ICS. See Information and Computer Science
- IDP. See Interdisciplinary Programs
- In absentia registration, graduate students 90
- Independent study 70
- Infant Care Center 75
- Information and Computer Science 240
- Information guide, inside back cover
- Information, visitor 21
- Institute for
- Brain Aging and Dementia 84
  - Cancer Research 83
  - Critical Theory 84
  - Humanities Research 82
  - Mathematical Behavioral Sciences 85
  - Surface and Interface Science 85
  - Transportation Studies 85, 254
- Instructional and research facilities 10
- Instructional Development Services 11
- Insurance, health 80
- Inter-campus exchange 90
- Inter-campus visitor 67
- Intercollegiate athletics 80
- Interdisciplinary Programs (IDPs) 250
- International Baccalaureate 43, 49
- International Opportunities Program 57
- International students
- admission, graduate 88
  - admission, undergraduate 47
  - course credit 47, 190
  - financial aid 36
  - groups 76
  - health insurance fee 33
  - services for 77
- Intern Teaching Credential Program 143
- Intersegmental General Education Transfer Curriculum 61
- Intramural activities 81
- Irvine campus 4, 10
- Irvine Ecological Preserve 12, 122
- Irvine Meadows West RV Park 78
- Irvine Research Units 85
- Irvine Barclay Theatre 94
- Italian 209
- J**
- Japanese 197
- Journal of Undergraduate Research in the Biological Sciences 122
- Judaic Studies 194
- K**
- KUCI, campus radio station 74
- L**
- Language learning resources 188
- Language other than English 43, 47, 58, 60, 62, 224
- Lapse of status 66
- Laser Microbeam and Medical Program (LAMMP) 12
- Late enrollment 65
- Latin 194
- Latin American Studies 253
- Law, preprofessional preparation for 28
- Learning-disabled students, assistance for 76
- Learning Skills Center 53
- Leave of absence 67, 90
- Lesbian, Gay, and Bisexual Resource Center 77
- Libraries 10
- Limited status 88
- Linguistics, Department of 344
- Literary Criticism 203
- Literature, English and Comparative 202
- Also see specific languages.
- Loans 39
- Logic and Methodology 229
- "Lower division" 20
- M**
- Major, changing, choosing, declaring, double, undeclared 26
- Majors, list of undergraduate 23-24
- Management 263
- Maps 413-415
- Materials Science and Engineering 160
- Mathematical Behavioral Science 85, 363
- Mathematics 283
- Mathematics and symbolic systems. See Breadth requirement
- Mechanical Systems 182
- Media Services 11
- Medical Center Library 11
- Medical Center, UCI 12, 377

Medical Scientist Program (M.D./Ph.D.).  
 See College of Medicine  
 Medicine. See College of Medicine  
 Medicine, preprofessional preparation for 28  
 Medieval Studies 224  
 Mesa Court. See Housing  
 Microbiology and Molecular Genetics 141, 391  
 Microelectronics Systems Manufacturing 175  
 Middle Earth. See Housing  
 Minors, Undergraduate 23-24, 61  
 Credit for Pass/Not Pass courses 69  
 Molecular Biology and Biochemistry 135  
 Molecular Biology, Genetics, and Biochemistry, combined program in 131  
 Molecular Genetics 141, 391  
 Multicultural studies and international/global issues. See Breadth requirement  
 Multiple Subject Instruction Credential 144  
 Music 105

## N

National Academies of Sciences and Engineering 10  
 Native American Studies 261  
 Native speakers of languages other than English 47, 190  
 Natural Reserves System 12  
 Natural Sciences 58, 59  
 Newspaper, student 74  
 Nobel Laureates, UCI 397  
 Nondiscrimination statements 404  
 Nonresident Admission Requirements. See Admissions  
 Nonresident, reclassification of 35  
 Nonresident Tuition 34  
 Normal progress requirement 71

## O

Occupational and Environmental Health, Center for 13  
 Off-campus housing 77  
 Office of Research and Graduate Studies 82  
 academic advising 88  
 academic policies 89  
 academic residence 90  
 admission 88  
 advancement to candidacy 91  
 application 87

conferral of degrees 92  
 continuous registration 90  
 degree, filing for 92  
 degrees 22, 92  
 dissertation 92  
 enrollment policy 90  
 filing fee 33, 92  
 financial assistance 92  
 foreign student admission 88  
 Graduate and Professional Opportunity Program (GPOP) 87, 93  
 Graduate Record Examinations (GRE) Scores 88  
 intercampus exchange 90  
 limited status 88  
 Master's degrees 22, 91  
 part-time study 90  
 Pass/Not Pass grade option 89  
 Ph.D. degree 22, 91  
 readmission 90  
 research 82-87  
 residence requirements 90  
 Satisfactory-Unsatisfactory grades 89  
 scholastic requirements 89  
 teaching and research assistantships 92  
 thesis 92  
 transfers of credit 91  
 Officers, University 396  
 Ombudsman 10  
 On-campus housing 77  
 Optometrist 80  
 Organized Research Units 83  
 Orientation programs 52  
 Outreach programs 31

## P

PACE Installment Plan 32  
 Parents' Orientation Program 52  
 Parking 33  
 Part-time study 33, 66, 90  
 (PASS) Program of Academic Support Services 53  
 Payment of fees 32, 65  
 Petition for Resident Classification 35  
 Pharmacology and Toxicology 391  
 Phi Beta Kappa 55  
 Philosophy 227  
 Physical education. See Recreation.  
 Physical examination 80  
 Physical Sciences 273

Physics and Astronomy 289  
 Physiology and Biophysics 141, 392  
 Placement testing 49, 52  
 Political Psychology 349  
 Political Science 348  
 Politics and Society 348  
 Portuguese 234  
 Power Systems 175  
 Preliminary Credential 143  
 Preprofessional preparation 28  
 Preschool information 75  
 Principles of Community 398  
 Probation 71  
 Professional education, preparation for 28  
 Proficiency test. See Admissions, General Educational Development (GED) exam  
 Program, change of. See Change of class enrollment  
 Program of Academic Support Services (PASS) 53  
 Protein Engineering 132, 161, 277  
 Psychobiology 136  
 Psychology 332  
 Psychology and Social Behavior 308  
 Public Choice 349  
 Public Information 13  
 Publications 73

## Q, R

Radiological Sciences 393  
 Radio station 74  
 Rainbow Festival 76  
 Readmission  
 graduate students 67, 90  
 undergraduates 67  
 Records, student 66, 68, 401  
 Records, transcript of 50, 66  
 Recreation 81  
 Recreational vehicle park 78  
 Refunds 25  
 Regents, Board of 4, 396  
 Regents' fellowships 92  
 Regents' scholarships 38  
 Registration. See Enrollment  
 Registration Fee 32  
 advisory committee 79  
 Regulations, academic 68  
 Relations with Schools, Admissions and 20  
 Religious Studies 257  
 Repetition of courses 69  
 Repetition of foreign language courses 190

Requirements for admission 41-47  
 "A through F" course requirements 42  
 nonresident 46  
 transfer students 45, 46  
 Requirements for graduation 57-62  
 American History and Institutions 58  
 breadth 58-61  
 departmental. See individual departments  
 grade average 58, 68, 70, 89  
 residence, graduate 90; see also  
 individual school degree requirements  
 residence, undergraduate 58; see also  
 individual school degree requirements  
 school requirements 61, 63. See also  
 individual schools  
 Subject A 48, 53, 57, 59  
 UCI 58-61  
 unit 58  
 University 57  
 Research and Graduate Studies. See Office  
 of Research and Graduate Studies  
 Research assistantships 92  
 Research organizations 82  
 Residence Classification, Petition for 35  
 Residence halls 77  
 Residence in California, rules governing 34,  
 67  
 Residence requirements. See Requirements  
 for graduation  
 ROTC (Reserve Officer Training Corps) 73  
 Russian 232  
 Ryan Act 143

## S

SAAS (Student Academic Advancement  
 Services) 31  
 SAT I and SAT II; see Scholastic Assess-  
 ment Test I and II  
 Salary and Employment Information 403  
 San Joaquin Freshwater Marsh Reserve 12,  
 122  
 Satellite courses, Biological Sciences 126  
 Satisfactory progress 36  
 Schedule of Classes 20, 53, 59, 66, 70, 73  
 Scholarship Act, Alan Pattee 32  
 Scholarship requirements  
 for undergraduate admission 43  
 graduate 72, 89  
 undergraduate 70  
 Scholarships 38  
 Scholarship Opportunities Program 55  
 Scholastic Assessment Tests I and II (SAT I  
 and II) 41, 43, 44, 46, 49, 50

School and departmental announcements 74  
 School and departmental requirements 61,  
 63  
 Schools, description of 8  
 Second bachelor's degree 33, 41, 46  
 Security, campus 403  
 Senate, Academic 4, 9, 68  
 Services Credential 143  
 Single Subject Instruction Credential 143  
 Social and Behavioral Sciences. See Breadth  
 requirement  
 Social Behavior 308  
 Social Ecology 297  
 Social Networks 364  
 Social Relations 364  
 Social Sciences 322, 355  
 Sociology 359  
 Software 86, 237, 239  
 Sororities 76  
 Spanish 234  
 Specializations 23  
 SPOP (Student-Parent Orientation Program)  
 52  
 Sports 80  
 Sports Facilities 81  
 Stage Management 102  
 Statement of Intention to Register (SIR) 50  
 Statistics, specialization in 284  
 Student Academic Advancement Services  
 31  
 Student Center 78  
 Student conduct and discipline 399  
 Student employment 40, 74, 403  
 Student government 79  
 Student groups 76  
 Student Handbook, UCI 74  
 Student Health Service 80  
 Student-Parent Orientation Program (SPOP)  
 52  
 Student records 66, 68, 401  
 Student representation 79  
 Student Services, Division of 9, 20  
 Studio Art 112  
 Subject A 48, 53, 57, 59  
 Subject A Examination 53  
 Subject to disqualification 71  
 Summer M.A. Program in English 204  
 Summer Pre-Entry Program for Medical  
 Students 384  
 Summer Premedical Program 385  
 Summer sessions 72  
 Supplemental educational programs 72  
 Surface and Interface Science, Institute for  
 85  
 Systems and Signal Processing 175

## T

TAP (Tutorial Assistance Program) 54  
 Teaching assistantships 92  
 Teaching credentials 143  
 Teaching credential and M.S. degree in  
 Chemistry 277  
 Mathematics 285  
 Telephone numbers, campus. Inside back  
 cover  
 Telephone registration (TELE) 65  
 Television. See Film Studies  
 Testing, Research, and Evaluation Office 54  
 Thesaurus Linguae Graecae 12  
 Thesis 92  
 Three-Two Program 265  
 TOEFL 47, 88  
 Tours, campus 21  
 Toxicology, Environmental 388  
 Toxicology, Pharmacology and 391  
 Trailers, residential 78  
 Transcripts 50, 66  
 Transfer Curriculum, Intersegmental General  
 Education 62  
 Transfer of credit, unit 63, 91  
 Transfer, planning for 62  
 requirements 62  
 Transfer Student Services 21, 62  
 Transportation Economics 340  
 Transportation Science 254  
 Transportation Studies, Institute of 85  
 Trauma Center 12, 378  
 Travel service, Outroads-ASUCI 79  
 TSE (Test of Spoken English) 88  
 Tuition Fee 32  
 Tutorial Assistance Program (TAP) 54

## U

UC-ACCESS Program 82  
 UCI Academic Senate Distinguished  
 Faculty 398  
 UCI Arboretum 12, 122  
 UCI Bookstore 74  
 UCI Center for Occupational and Environ-  
 mental Health 13  
 UCI Distinguished Professors 397  
 UCI Endowed Chairs 397  
 UCI General Catalogue, how to use 20  
 UCI Journal 74  
 UCI Medical Center 12, 377

UCI-News 74  
 UCI Requirements 58  
 UCI Student Center 78  
 UCI Student Handbook 74  
 UCI Symphony Orchestra 106  
 Undecided/Undeclared students 26  
 Undergraduate Administrative Intern  
   Program 76  
 Undergraduate Admissions 41  
 Undergraduate advising 53  
 Undergraduate degree titles 22  
 Undergraduate Education, Division of 8, 52  
 Undergraduate majors and minors 23-24  
 Undergraduate scholarship requirements 70  
 Uni-Prep 52  
 Units, quarter 20, 58  
   semester equivalents 63  
 University administration 4, 396  
 University Advancement 13  
 University Extension 63, 72, 91  
   credits from, for graduate students 72  
   credits from, for undergraduate students  
     72  
 University/Industry Research and  
   Technology, Office of 82  
 University Libraries 10  
 University of California 4  
 University of California Humanities  
   Research Institute 82  
 University Officers 396  
 University Professors 4, 397  
 University Program for High School Schol-  
   ars (UPHSS) 21, 41, 44  
 University requirements 57  
 University Studies courses 26  
 "Upper division" 20  
 Urban and Regional Planning 312

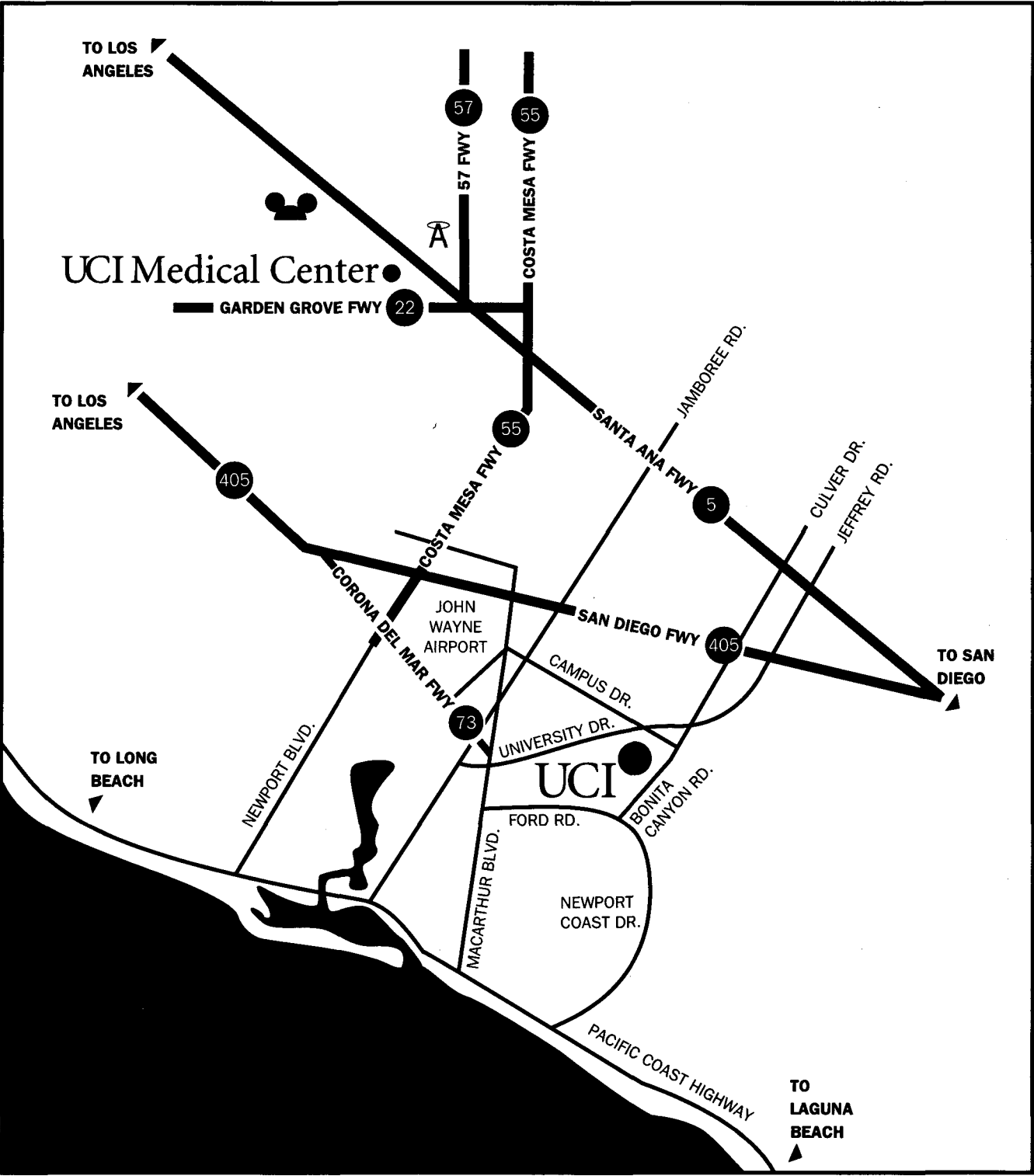
## V

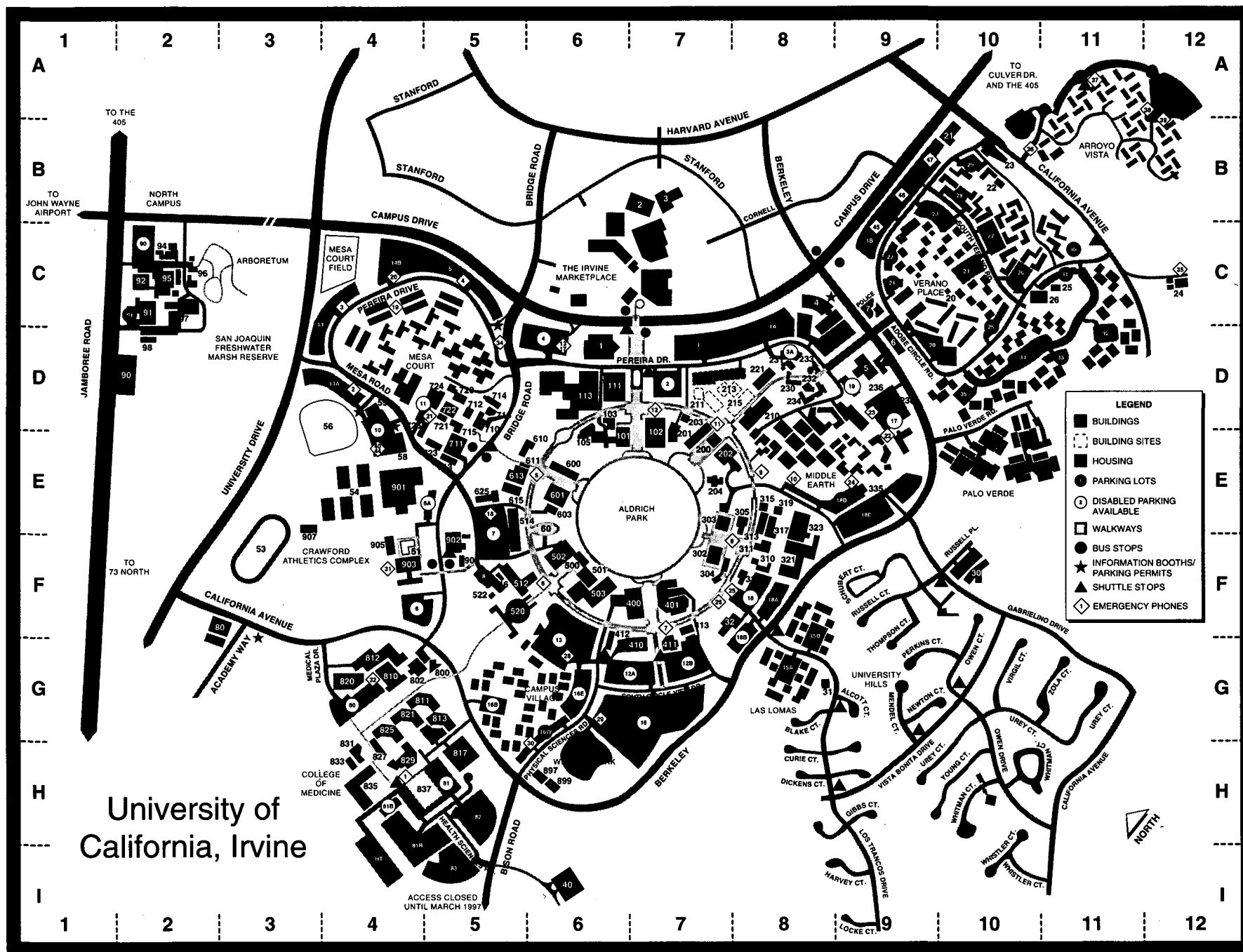
Veterans 34, 36, 40, 77

## W, X, Y, Z

Wayzgoose 21, 79  
 Welcome Week 52, 76, 80  
 Western Association of Schools and  
   Colleges (WASC) 9  
 Western Interstate Commission for Higher  
   Education 379  
 White Mountain Research Station Super-  
   course 122  
 Withdrawal from University 66  
 Women and Gender Education, Center for  
   77  
 Women's Opportunities Center 73  
 Women's Studies 255  
 Workload credit 68  
 Workload credit for ESL courses 47  
 Work-Study, Federal College 40  
 Writing, Programs in 203, 204  
 Writing Requirement 58, 59, 62  
 Writing Workshops, PASS 53









## DEPARTMENTS/OFFICES

Administration Building (D6) 111

Admissions:

College of Medicine (G4) 821

Graduate (D6) 111

Undergraduate (D6) 111

Air Pollution Labs (C2) 94

Alumni House (D8) 233

American Academy of Arts and Sciences (C8) 4

American Heart Association (B10) 21

Arboretum (C2) 96

Arnold and Mabel Beckman Center of the National Academies of Sciences and Engineering (F3) 80

Art and T. V. Studios (D5) 722

Art Gallery (D5) 712

Athletics Complex:

Pool (F4) 51

Track (F3) 53

Tennis Courts (E4) 54

Anteater Field (D4) 56

Bren Events Center (E4) 901

Crawford Hall (F4) 903

Handball/Racquetball Courts (F4) 905

Beckman Laser Institute (H5) 817

Berkeley Place (C8) 4

Biological Sciences I (Steinhaus Hall) (F6) 502

Biological Sciences II (F6) 503

Biological Sciences Administration (F6) 515

Biological Sciences Lecture Hall (F6) 501

Bookstore (The UCI Store, Marketplace) (B7) 3

Bookstore, The UCI (D6) 113

Bren Events Center (E4) 901

Cancer Research Institute (F6) 502

Career Planning and Placement Center (E6) 105

Center for Research Information Technology and Organizations (C8) 4

Center for the Neurobiology of Learning and Memory (Bonney Center) (F5) 512

Central Plant (F5) 902

Chancellor's Office (D6) 111

Child Care Centers:

Children's Center (C10) 26

Early Childhood Education Center (B10) 23

Extended Day Center (C11) 25

Infant/Toddler Center (B10) 22

University Montessori School (F10) 30

Verano Preschool (C10) 20

Child Development Center (D2) 90

Computer Science (F7) 302

Computer Science/Engineering (F8) 312

Computer Science II (F8) 304

Concert Hall (D5) 710

Counseling Center (E6) 105

Crawford Hall (F4) 903

Cross-Cultural Center (D6) 103

Disability Services (E5) 615

Drama and Art History (D5) 715

Electrical Substation (I6) 40

Engineering and Computing Trailer (E8) 317

Engineering Gateway (F8) 321

Engineering Instructional Facility (E9) 335

Engineering Laboratory Facility (E8) 323

Engineering Lecture Hall (E8) 305

Engineering Tower (E7) 303

Facilities Management Shops (C2) 97

Faculty Research Facility (C2) 95

Faculty/Staff Housing Office (G8) 31

Family Fitness Center (C8) 4

Farm School/Barn (C12) 24

Food Facilities:

B.C.'s Cavern on the Green (F6) 500

Bonjour Cafe (D8) 233

Cafe Med (G5) 800

Olive Grove (D5) UCI Arts Village

Phoenix Grille (E7) 204

UCI Student Center (D6) 113

Founders' Court (E6) 60

Gateway Commons (E6) 101

Graduate School of Management (D8) 221

Graduate Studies and Research (D6) 111

Greenhouse (E5) 514

Grounds Maintenance Facility (H6) 897

Handball and Racquetball Courts (F4) 905

Health Policy and Research (C8) 4

Housing Administrative Services (D9) 6

Human Resources, Staff (C8) 4

Humanities Annex (E5) 610

Humanities Hall (E6) 601

Humanities Interim Classroom Facility

(E5) 611

Humanities Office Building (E6) 600

Humanities Office Building 2 (E5) 625

Humanities Research Institute (D6) 111

Humanities Trailer Complex (E5) 613

ICS Trailers (E8) 313

ICS/Engineering Research Facility (F8) 310

Information, Campus (D9) 6, (D6) 111,

(D6) 113

Information and Computer Science (F7) 302

Institute for Surface and Interface Science

(F7) 400

Institute of Transportation Studies (C8) 4

Interfaith (E8) 319

Interim Classroom Facility (E8) 315

Interim Office Building (C2) 92

Irvine Barclay Theatre (D6) 1

Irvine Hall (H4) 835

Libraries:

Main (E7) 102

Science (F5) 520

Little Theatre (E6) 601

Mailroom (C2) 93

McDonnell Douglas Engineering Auditorium

(F8) 311

Media Services (E6) 603

Medical Education Building (G4) 802

Medical Plaza (G4) 820

Medical Sciences A (G5) 813

Medical Sciences B (G5) 811

Medical Sciences C (G4) 821

Medical Sciences D, William Cheney Building

(G4) 825

Medical Sciences E (H4) 827

Medical Sciences F (H4) 831

Medical Sciences Classroom Facility (H4) 833

Medical Surge I (G4) 810

Medical Surge II (G4) 812

Mesa Arts Building (E4) 58

Mesa Office Building (D4) 59

Music Building (D5) 710

Neuroscience Research Facility (site) (H5) 837

Nixon Theatre (D5) 722

Orchestra Rehearsal Hall (D5) 718

Parking and Transportation Office (C9) 7

Physical Sciences I (F7) 400

Physical Sciences II (F7) 401

Physical Sciences Classroom Building (F7) 413

Physical Sciences Graduate Offices (F6) 412

Physical Sciences Lecture Hall (G7) 411

Physical Sciences Research Facility (G7) 410

Physical Sciences Trailers (F6) 412

Plumwood House (Hitachi) (H4) 829

Police (C9) 7

Public Services (C9) 7

Purchasing (C9) 7

Rachel Long Morgan Building (D8) 231

Radioactive and Chemical Waste Handling

Facility (F5) 522

Receiving (C2) 91

Recycling Center (D2) 98

Registrar:

College of Medicine (H4) 827

Main Campus (D6) 111

Rockwell Engineering Center (F8) 311

Sculpture and Ceramic Studios (D5) 720

Social Ecology (D8) 210

Social Science A (site) (D7) 211

Social Science B (site) (D7) 213

Social Science C (site) (D8) 215

Social Science Hall (E7) 200

Social Science Laboratory (E7) 202

Social Science Tower (E7) 201

Social Science Trailer (D7) 203

Steinhaus Hall (Biological Sciences I) (F6) 502

Storehouse (C2) 91

Student Center (D6) 113

Student Health Center (D9) 5

Student Services I, II (E6) 105

Studio Four (E5) 725

Studio Theatre (E5) 713

Teacher Education (C8) 4

Thesaurus Linguae Graecae (C8) 4

Theoretical Neurobiology Facility (F5) 516

Ticket Offices:

Bren Events Center (E4) 55

UCI Arts (E5) 711

Irvine Barclay Theatre (D6) 1

Tours (D6) 111

UC Conference Center (D4) 59

UCI Art s Dean's Office (D5) 721

UCI Arts Production Studio (E5) 723

UCI Arts Student Affairs (D5) 724

UCI Arts Village (D5) 710-725

University Club (F8) 32

University Extension A (D8) 231

University Extension B (D8) 230

University Extension C (D8) 232

University Extension D (D8) 234

University Extension H (D9) 236

University Extension I (D9) 238

University Extension J (D9) 240

University/Industry Research Technology

(B7) 2

University Tower (B7) 2

Village Theatre (E5) 711

Vivarium Administrative Offices (G5) 815

Women and Gender Education, Center for

(E5) 610

Women's Opportunities Center (D8) 231

## BUILDINGS

1 Irvine Barclay Theatre (D6)

2 University Tower (B7)

3 Bookstore (The UCI Store,

Marketplace) (B7)

4 Berkeley Place (C8)

5 Student Health Center (D9)

6 Housing Administrative Services (D9)

7 Public Services (C9)

20 Verano Preschool (C10)

21 American Heart Association (B10)

22 Infant/Toddler Center (B10)

23 Early Childhood Education Center (B10)

24 Farm School/Barn (C12)

25 Extended Day Center (C11)

26 Children's Center (C10)

30 University Montessori School (F10)

31 Faculty/Staff Housing Office (G8)

32 University Club (F8)

40 Electrical Substation (I6)

51 Pool (F4)

53 Track (F3)

54 Tennis Courts (E4)

56 Anteater Field (D4)

58 Mesa Arts Building (E4)

59 Mesa Office Building (D4)

60 Founders' Court (E6)

80 Arnold and Mabel Beckman Center of the

National Academies of Sciences and

Engineering (F3)

90 Child Development Center (D2)

91 Receiving/Storehouse (C2)

92 Interim Office Building (C2)

93 Mailroom (C2)

94 Air Pollution Labs (C2)

95 Faculty Research Facility (C2)

96 Arboretum (C2)

97 Facilities Management Shops (C2)

98 Recycling Center (D2)

101 Gateway Commons (E6)

102 Main Library (E7)

103 Cross-Cultural Center (D6)

105 Student Services I, II (E6)

111 Administration (D6)

113 Student Center (D6)

200 Social Science Hall (E7)

201 Social Science Tower (E7)

202 Social Science Laboratory (E7)

203 Social Science Trailer (D7)

204 Phoenix Grille (E7)

210 Social Ecology (D8)

211 Social Science A (site) (D7)

213 Social Science B (site) (D7)

215 Social Science C (site) (D8)

221 Graduate School of Management (D8)

230 University Extension B (D8)

231 Rachel Long Morgan Building/University

Extension A (D8)

232 University Extension C (D8)

233 Alumni House (D8)

234 University Extension D (D8)

236 University Extension H (D9)

238 University Extension I (D9)

240 University Extension J (D9)

302 Information and Computer Science (F7)

303 Engineering Tower (E7)

304 Computer Science II (F8)

305 Engineering Lecture Hall (E8)



**School of the  
Arts**



**School of  
Biological Sciences**



**Department of  
Education**



**School of  
Engineering**



**School of  
Humanities**



**Department of Information  
and Computer Science**



**Interdisciplinary  
Studies**



**Graduate School  
of Management**



**School of  
Physical Sciences**



**School of  
Social Ecology**



**School of  
Social Sciences**



**College of  
Medicine**

## Correspondence Directory

University of California, Irvine, CA 92697

Campus directory assistance: (714) 824-5011

Speech and hearing impaired persons: TDD (714) 824-6272

Online information is available on the World Wide Web at <http://www.uci.edu/> and on the UCI gopher server.

Office	Location	Telephone (714)
Admissions		
College of Medicine	118 Medical Sciences I	824-5388
Graduate	120 Administration Building	824-6761
Undergraduate Admissions and Relations with Schools	204 Administration Building	824-6703
Associated Students	200 UCI Student Center	824-5547
Bookstore, UCI	UCI Student Center	824-B00K
Career and Life Planning Center	Student Services I	824-6881
Dean of Students	UCI Student Center	824-5590
Disability Services	Trailer Complex	824-7494
Educational Opportunity Program	202 Administration Building	824-7484
Financial Aid	102 Administration Building	824-6261
Housing, Off-Campus	209 Administration Building	824-7247
Housing, On-Campus	Housing Administrative Services	824-6811
International Center	Student Services I	824-7249
Registrar	215 Administration Building	824-6124
Student Health	Student Health Center	824-5304
Summer Sessions	University Extension	824-5493
Transfer Student Services	204 Administration Building	824-6703
UCI Medical Center	101 The City Drive Orange, CA 92868	456-6011
Veterans Student Services	Student Services I	824-6477
Vice Chancellor Student Services	405 Administration Building	824-7985

**How to Obtain a Catalogue.** Copies of the *1996-97 UCI General Catalogue* are available in person for \$6 (plus tax) from the UCI Bookstore and University Extension. Catalogues also are available by mail: California, \$10; continental U.S., \$11; Alaska and Hawaii, \$16; international destinations, \$20. Prices include tax and first-class or equivalent mailing. Checks, or International Money Orders, payable in U.S. dollars, should be made payable to UC Regents, and sent to the UCI Bookstore, Student Center, University of California, Irvine, CA 92697-1550. For credit card purchases, call the UCI Bookstore at (714) 824-BOOK.

The *Catalogue* also is available for reference (1) through the Internet, (2) in most California public libraries, (3) in the library or counseling center of most California high schools and colleges, and (4) in the libraries of some universities, colleges, and educational counseling centers throughout the world.





**UCI**  
University of California, Irvine

509 Administration Bldg.  
Irvine, CA 92697-1010

Bound Printed Matter  
BULK RATE  
U.S. Postage  
PAID  
Santa Ana, CA  
Permit No. 1106